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Announcements & Index

4 February 18, 1983

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U.S. DEPARTMENT OF COMMERCE **Malcolm Baldrige, Secretary of Commerce**
NATIONAL TECHNICAL INFORMATION SERVICE

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UNITED STATES DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

January, 1983

Dear GRA&I Subscriber:

Due to a computer error, this issue of Government Reports Announcements and Index carries fewer announcements than usual.

During the production cycle, half of the citations intended for inclusion here were not included; however, an unusually large future issue, most probably issue 8308, dated April 15, 1983, will be a makeup issue.

We are sorry for any inconvenience this causes you.

Sincerely,

Linda J. LaGarde
Product Manager

GOVERNMENT REPORTS

Announcements & Index

Volume 83, Number 4 February 18, 1983

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Bibliographic entries in this journal are arranged by COSATI* classification. This scheme uses 22 broad subject categories which are further separated into 178 subcategories. A bibliographic record is listed in one subcategory only. There are no cross references except in the indexes. Within a subcategory, entries are listed alphanumerically by the NTIS order number.

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* Committee on Scientific and Technical Information

NTIS SUBJECT CATEGORY AND SUBCATEGORY STRUCTURE

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Category 1. Aeronautics

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Category 3. Astronomy and Astrophysics

Subcategories: Astronomy; Astrophysics; Celestial Mechanics.

Category 4. Atmospheric Sciences

Subcategories: Atmospheric Physics; Meteorology.

Category 5. Behavioral and Social Sciences

Subcategories: Administration and Management; Documentation and Information Technology; Economics; History, Law and Political Science; Human Factors Engineering; Humanities; Linguistics; Man-machine Relations; Personnel Selection, Training and Evaluation; Psychology (Individual and Group Behavior); Sociology.

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Subcategories: Components; Computer; Electronic and Electrical Engineering; Information Theory; Subsystems; and Telemetry.

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Subcategories: Conversion Techniques; Power Sources; Energy Storage.

Category 11. Materials

Subcategories: Adhesives and Seals; Ceramics, Refractories,and Glasses; Coatings, Colorants, and Finishes; Composite Materials; Fibers and Textiles; Metallurgy and Metallography; Miscellaneous Materials; Oils, Lubricants, and Hydraulic Fluids; Plastics; Rubbers; Solvents, Cleaners, and Abrasives; Wood and Paper Products.

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Subcategories: Mathematics and Statistics; Operations Research.

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SAMPLE ENTRY

Field 12—MATHEMATICAL SCIENCES
Group 12A—Mathematics and Statistics
PB80-104045 PC **A03**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Constructed Facilities Div.
Computation of Hankel Transforms Using the Fast-Fourier Transform Algorithm,
E. Kausel, and G. Bouckovalas. Aug 79, 49p R79-12, NSF/RA-79-12, NSF/RA-790206
Grant NSF-ENV77-18339

An efficient numerical procedure is presented for the computation of Hankel Transforms. The algorithm is based on the expression of the Hankel Transform in terms of a two-dimensional Fourier Transform, which is then reduced to only one dimension. The latter is then evaluated with the Fast Fourier Transform algorithm. Examples are presented, and a listing of the computer program included.

NTIS Subject Category
NTIS Subcategory
NTIS order number Availability/Price codes
Corporate or Performing Organization

Report title

Personal authors Report date Page count
Report number(s)
Contract or grant number(s)

Abstract

1. AERONAUTICS

1A. Aerodynamics

AD-A120 712/5 PC **A02**/MF **A01**
Stanford Univ., CA. Dept. of Mathematics.
Contact Problems Involving the Flow Past an Inflated Aerofoil,
J.-M. Vanden-Broeck. Apr 81, 5p SCIENTIFIC-52, ARO-17902.5-ma
Contracts N00014-79-C-0777, DAAG29-81-K-0032
Pub. in Jnl. of Applied Mechanics, v49 p263-265 Jun 82.

No abstract available.

N82-33340/2 PC **A05**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
User's Manual for Interfacing a Leading Edge, Vortex Rollup Program with Two Linear Panel Methods.
B. M. E. Desilva, and R. T. Medan. Apr 79, 98p NAS 1.15:78564, A-7744, NASA-TM-78584

Sufficient instructions are provided for interfacing the Mangler-Smith, leading edge vortex rollup program with a vortex lattice (POTFAN) method and an advanced higher order, singularity linear analysis for computing the vortex effects for simple canard wing combinations.

N82-33342/8 PC **A04**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Results of Buffet Tests in a Cryogenic Wind Tunnel.
R. P. Boyden, and W. G. Johnson, Jr.. Sep 82, 51p NAS 1.15:84520, L-15370, NASA-TM-84520

Buffet tests on two semispan wing models with different leading edge sweep show that it is feasibile to use the standard dynamic wing root bending moment technique in a cryogenic wind tunnel. One model was a slender 65 deg swept delta wing with sharp leading edges. The other model was an unswept wing of aspect ratio 1.5 with a British NPL 9510 airfoil section. The results for the 65 deg swept delta wing indicate

the importance of matching the reduced frequency parameter in model tests for planforms which are sensitive to reduced frequency parameter if quantitative buffet measurements are required. The unique ability of a pressurized cryogenic wind tunnel to separate the effects of Reynolds number and of static aeroelastic distortion by variations in the tunnel stagnation temperature and pressure were demonstrated.

N82-33343/6 PC **A03**/MF **A01**
Cambridge Univ. (England). Dept. of Engineering.
Supersonic Cascade Flows with Subsonic Axial Mach Number.
A. R. Manwell. 1982, 42p CUED/A-TURBO/TR-110, ISSN-0309-6521

Two dimensional cascade flows which have supersonic velocities at entry are investigated, considering a supersonic velocity component along the axis, assuring that disturbances travel forward into the incident flow. It it assumed that a shock wave springs from the leading edge of each blade and extends downwards to the upper surface of the blade immediately below, with the possibility that these may be variously inclined to the stream, treating blade profiles which are both straight lines and more general curves are treated. The incident flow need not be a uniform stream, therefore very general (steady) periodic flows in a finite region ahead of the face of the cascade are considered. For suitable flow regions, which can be defined in terms of the characteristic coordinates of the incident flow, boundary value problems are formulated for both the family of steady flow solutions under consideration and the corresponding unsteady motions associated with time dependent disturbances.

N82-33344/4 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Nasa Research on Viscous Drag Reduction.
R. H. Petersen, and D. V. Maddalon. Aug 82, 28p NAS 1.15:84518, NASA-TM-84518
Presented at the 13TH Congr. Of the Intern. Council of the Aeron. Sci. (Icas)/Aiaa Aircraft Systems and Technol. Meeting, Seattle, 22-27 Aug. 1982.

Research on natural laminar flow, laminar flow control by suction, and turbulent drag reduction is discussed. Preliminary results suggest that a significant amount of natural laminar flow can be achieved on small, straight wing airplanes. On larger, swept wing aircraft, laminar flow control by distributed suction is expected to result in significant fuel savings. The area over which laminar flow control is applied depends on tradeoffs involving structural complexity, maintenance, and cost. Several methods of reducing turbulent skin friction by altering the turbulence structure itself have shown promise in exploratory testing. The status of these technologies and the benefits of applying them to future aircraft are reviewed.

N82-33345/1 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
Finite Difference Modeling of Rotor Flows Including Wake Effects.
F. X. Caradonna, A. Desopper, and C. Tung. Aug 82, 29p NAS 1.15:84280, A-9032, NASA-TM-84280
Prepared in Cooperation with Army Research and Technology Labs., Moffett Field, Calif.

Rotary wing finite difference methods are investigated. The main concern is the specification of boundary conditions to properly account for the effect of the wake on the blade. Examples are given of an approach where wake effects are introduced by specifying an equivalent angle of attack. An alternate approach is also given where discrete vortices are introduced into the finite difference grid. The resulting computations of hovering and high advance ratio cases compare well with experiment. Some consideration is also given to the modeling of low to moderate advance ratio flows.

N82-33346/9 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
Recent Applications of the Transonic Wing Analysis Computer Code, TWING.
N. R. Subramanian, T. L. Holst, and S. D. Thomas. Aug 82, 42p NAS 1.15:84283, A-9035, NASA-TM-84283

An evaluation of the transonic-wing-analysis computer code TWING is given. TWING utilizes a fully implicit approximate factorization iteration scheme to solve the full potential equation in conservative form. A numerical elliptic-solver grid-generation scheme is used to generate the required finite-difference mesh. Several wing configurations were analyzed, and the limits of applicability of this code was evaluated. Comparisons of computed results were made with available experimental data. Results indicate that the code is robust, accurate (when significant viscous effects are not present), and efficient. TWING generally produces solutions an order of magnitude faster than other conservative full potential codes using successive-line overrelaxation. The present method is applicable to a wide range of isolated wing configurations including high-aspect-ratio transport wings and low-aspect-ratio, high-sweep, fighter configurations.

N82-33347/7 PC **A05**/MF **A01**
Cessna Aircraft Co., Vandalia, OH. McCauley Accessory Div.
Impact of Advanced Propeller Technology on Aircraft/Mission Characteristics of Several General Aviation Aircraft.
Final Report.
I. D. Keiter. Sep 82, 82p NAS 1.26:167984, NASA-CR-167984
Contract NAS3-21719

Studies of several General Aviation aircraft indicated that the application of advanced technologies to General Aviation propellers can reduce fuel consumption in future aircraft by a significant amount. Propeller blade weight reductions achieved through the use of composites, propeller efficiency and noise improvements achieved through the use of advanced concepts and improved propeller analytical design methods result in aircraft with lower operating cost, acquisition cost and gross weight.

1B. Aeronautics

AD-A120 473/4 PC **A05**/MF **A01**
Performance Measurement Associates, Inc., Vienna, VA.
Performance Measures for Aircraft Carrier Landings as a Function of Aircraft Dynamics.
Final technical rept. 23 Sep 80-22 Jan 82,
Edward M. Connelly. Jan 82, 86p PMA55-1-81, NAVTRAEQUIPC-80-C-0132-1
Contract N61339-80-C-0132

A theory of performance measurement for operator controlled systems is presented. The theory permits synthesis of a system performance on successive data samples based on the impact of the sampled performance on the overall summary of performance. The dynamics of the controlled element, i.e., the aircraft, are effectively removed from the measurement even though the pilot (operator) continues to control the aircraft. This report documents the development of measures for aircraft carrier landings for the glide path and angle of attack control channels. In addition to the aircraft carrier landing problems, an application of system performance measures to air-to-ground weapons launch problems were analy zed. The weapon launch problem is characterized by the existence of a release hyper-surface from which a high probability of kill can be expected. Thus, the problem is not characterized as having necessarily a single path which must be flown to a weapons release point, but rather, a confluence of paths exist which proceed to the release hyper-surface. A method for developing a summary measure for the weapons release problem is presented along with an outline of the method of synthesizing the associated system performance measure. Finally, a comparison of the nature and applications of linear pilot models and system performance measures is developed.

AD-A120 507/9 PC **A02**/MF **A01**
Air Force Aerospace Medical Research Lab., Wright-Patterson AFB, OH.
USAF Bioenvironmental Noise Data Handbook. Volume 157. KC-10A In-Flight Crew Noise.
Technical rept.,
Harald K. Hille. Sep 82, 18p Rept no. AMRL-TR-75-50-VOL-157
See also Volume 158, AD-A116 930.

The KC-10A is a standard USAF tanker-transport aircraft with high-speed, high altitude refueling and long range transport capability. This report provides measured data defining the bioacoustic environments at flight crew/passenger locations inside this helicopter during normal flight operations. Data are reported for 24 locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Refer to Volume 1 of this handbook, USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application, AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

AD-A120 508/7 PC **A02**/MF **A01**
Air Force Aerospace Medical Research Lab., Wright-Patterson AFB, OH.
USAF Bioenvironmental Noise Data Handbook. Volume 150. C-140 In-Flight Crew Noise.
Technical rept.,
Harald K. Hille. Sep 82, 18p Rept no. AMRL-TR-75-50-VOL-150
See also Volume 152, AD-A120 509.

The C-140 is a USAF transport aircraft used for operational support. This report provides measured data defining the bioacoustic environments at flight crew/passenger locations inside this aircraft during normal flight operations. Date are reported for seven locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Refer to Volume 1 of this handbook, USAF Bioenvironmental Noise Data Handbook, Vol. 1: Organization, Content and Application, AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

AD-A120 509/5 PC **A02**/MF **A01**
Air Force Aerospace Medical Research Lab., Wright-Patterson AFB, OH.
USAF Bioenvironmental Noise Data Handbook. Volume 152. C-12A In-Flight Crew Noise.
Technical rept.,
Harald k. Hille. Sep 82, 18p Rept no. AMRL-TR-75-50-VOL-152
See also Volume 154, AD-116 146.

The C-12A is a military version of the Beechcraft Super King Air 200. This report provides measured data defining the bioacoustic environments at flight crew/passenger locations inside this aircraft during normal flight operations. Data are reported for five locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Refer to Volume 1 of this handbook, USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application, AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

AD-A120 678/8 PC **A05**/MF **A01**
Systems Control Technology, Inc., West Palm Beach, FL.
Instrument Approach Aids for Helicopters.
Final rept. Jan 81-Jan 82,
Edwin D. McConkey, and Ronald E. Ace. Jul 82, 94p DOT/FAA/RD-82/6
Contract DTFA01-80-C-10080

This report identifies the various instrument approach procedures that are available to the helicopter operator. Emphasis is placed on the recently approved Helicopter Only procedures, the criteria for which are contained in Chapter 11 of the Terminal Instrument Procedures Handbook. The objective of this study was to examine currently available solutions to helicopter approach needs. The study also covers new and innova-

tive solutions to helicopter approach requirements. This was accomplished by: Identifying the various navigation aids now being used which may have general application to U.S. helicopter operations. Describing typical locations of use, typical approach procedures, and minimums for each of these aids. Providing estimated equipment costs for both the ground and airborne portions of these systems. Discussing the rationale used to support the use of a particular aid at a particular location or in a specific operational environment. Results of this investigation are presented in the form of a series of helicopter instrument approach options for the user. (Author)

AD-A120 791/9 PC **A02/MF A01**
Air Force Aerospace Medical Research Lab., Wright-Patterson AFB, OH.
USAF Bioenvironmental Noise Data Handbook. Volume 155. CH-3 In-Flight Crew Noise.
Harald K. Hille. Sep 82, 18p Rept no. AMRL-TR-75-50-VOL-155
See also Volume 1, AD-A031 865 and Volume 154, AD-A116 146.

The CH-3 is a USAF tactical combat transport helicopter. This report provides measured data defining the bioacoustic environments at flight crew/passenger locations inside this helicopter during normal flight operations. Data are reported for nine locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise levels and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Refer to Volume 1 of this handbook, USAF Bioenvironmental Noise Data handbook, Vol 1: Organization, Content and Application, AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

PB82-916700 PC**$300.00**
National Transportation Safety Board, Washington, DC.
Transportation Initial Decisions and Orders and Board Opinions and Orders Adopted and Issued.
1982, 12 issues
Paper copy available on subscription, North American Continent price $300.00/year; all others write for quote. Single copies also available in paper or microfiche.

This subscription offers publications which contain the Judge's initial decisions and Board opinions and orders in safety enforcement and seaman enforcement cases.

PB82-916701 PC **A11/MF A01**
National Transportation Safety Board, Washington, DC.
Transportation Initial Decisions and Orders and Board Opinions and Orders Adopted and Issued during the Month of April, 1982.
Apr 82, 249p NTSB-EA-EM-82-1
Paper copy also available on subscription, North American Continent price $300.00/year; all others write for quote.

The document contains the Judge's initial decisions and Board opinions and orders in safety enforcement and seaman enforcement cases.

PB82-916702 PC **A17/MF A01**
National Transportation Safety Board, Washington, DC.
Transportation Initial Decisions and Orders and Board Opinions and Orders Adopted and Issued during the Month of May, 1982.
May 82, 382p NTSB-EA-EM-82-2
Paper copy also available on subscription, North American Continent price $300.00/year; all others write for quote.

The document contains the Judge's initial decisions and Board opinions and orders in safety enforcement and seaman enforcement cases.

PB82-916703 PC **A19/MF A01**
National Transportation Safety Board, Washington, DC.
Transportation Initial Decisions and Orders and Board Opinions and Orders Adopted and Issued during the Month of June, 1982.
Jun 82, 434p NTSB-EA-EM-82-3
Paper copy also available on subscription, North American Continent price $300.00/year; all others write for quote.

The document contains the Judge's initial decisions and Board opinions and orders in safety enforcement and seaman enforcement cases.

PB83-954414 PC **N01/MF N01**
National Technical Information Service, Springfield, VA.
Noise Control for Aircraft. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 258p

This bibliography contains citations concerning the techniques for studying and predicting aircraft noise. Noise control techniques, including landing trajectories, noise impact and other sources of noise pollution are discussed. Community response to aircraft noise is considered. (Contains 255 citations fully indexed and including a title list.)

1C. Aircraft

AD-A120 679/6 PC **A04/MF A01**
Jet Propulsion Lab., Pasadena, CA.
Application of Thermochemical Modeling to Aircraft Interior Polymeric Materials.
Final rept.,
Won Dokko, and Kumar Ramohalli. Jun 82, 75p JPL-5030-543, DOT/FAA/CT-82/83
Contract DOT-FA80NA

This report summarizes the results from a twelve-month study of the feasibility of applying certain basic concepts in the thermochemical modeling to aircraft cabin fire safety. The concepts developed earlier on a NASA-sponsored program were applied to six specific tasks dealing with the thermochemical performance of interior carpets and seat cushions. The specific objective was to predict the burning rate as a function of the material property values, geometry and heat flux; more important, it was the aim to predict and provide rationale for certain special features that have been experimentally observed by the FAA. It was also the specific objective to introduce new concepts that have not been the subject of pursuit at other centers. That is, the novel concepts developed at JPL were highlighted. Three fundamental hypotheses were introduced; the condensed phase degradation of the polymeric material is the overall rate-limiting step; the extent of degradation at the vaporization step (at the surface) is not arbitary but has to be specified by a scientific criterion such as the vapor pressure equilibrium criterion; and the diffusion/mixing of the pyrolysis products with the oxidizer (air) is the rate-limiting step in the vapor phase combustion.

AD-A120 682/0 PC **A05/MF A01**
Air Force Wright Aeronautical Labs., Wright-Patterson AFB, OH.
AFWAL FY81 Technical Accomplishments.
Final technical rept.,
Russell S. Hoff, Jr. Apr 82, 76p Rept no. AFWAL-TR-82-0001

This report contains highlights of significant technical achievements made during FY 81. The document exemplifies the broad range of R/D activities being undertaken within AFWAL and the significance of the technological contributions being made to enhance Air Force operational capabilities. The accomplishments have been grouped by Laboratory to assist the reader in understanding the technologies covered. Points of contact have been identified for each accomplishment, if additional information on the subject is desired.

AD-A120 769/5 PC **A03/MF A01**
Army Materials and Mechanics Research Center, Watertown, MA.
Fracture Analysis of Reaction-Bonded Silicon Nitride Turbine Shrouds.
Final rept.,
Donald R. Messier, Liselotte J. Schioler, George D. Quinn, and James C. Napier. Jun 82, 45p Rept no. AMMRC-TR-82-43

Reaction-bonded silicon nitride turbine shrouds were examined after engine rig testing to determine failure mechanisms and evaluate material quality. Bend test specimens machined from the shrouds were approximately equal in strength to specimens cut from flat billets of virgin material. While most component and bend specimen fractures initiated at surfaces, internal origins were observed in some cases. Fracture mechanics analysis of as the bend test data yielded a value of Klc = 1.79 MN/m cubed/2 in agreement with literature data. Fracture mirror measurements indicated that shrouds failed at stresses approximately three times less than bend specimen. Probable causes for this were gross machining defects, size effects, and possible residual stresses.

AD-A120 830/5 PC **A05/MF A01**
Lancaster Analytics, North Canton, OH.
Naval Airship Program for Sizing and Performance (NAPSAP), Computer Program Development: Program Update Number 2.
Final rept.,
Jon W. Lancaster. 1 Oct 82, 77p LA-TR-4, NADC-81218-60
Contracts N62269-81-M-3248, N62269-80-M-2376
Supplement to Rept. nos. NADC-79206-60 dated Jan 80 and NADC-80075-60 dated Sep 81. Sponsored in part by Contracts N62269-78-M-4462 and N62269-79-M-2870.

A computer program called NAPSAP, for Naval Airship Program for Sizing and Performance, performs preliminary vehicle design and performance evaluations for both rigid and non-rigid Lighter Than Air (LTA) vehicles. Program capabilities have been tailored to vehicle sizes and missions currently being investigated as part of the joint U.S. Navy - U.S. Coast Guard Maritime Patrol Airship, MPAS, Program and U.S. Navy Operational Mission Applications. The program has been designed to operate on a minimum of input data (only five cards are necessary) but has the capability to examine the influence of some 40 key parameters. Once the design section of NAPSAP converges on a vehicle which meets the input requirements (such as maximum speed, payload, enduracne, etc.) this vehicle can then be operated against a specified mission profile. Program developments include the addition of more detailed static aerodynamic coefficients, configuration/geometry details, static weight and balance calculations and the capability to analyze mission performance in towing operations in considerable detail. In its present form core memory size is 150K octal words on CD 6600 or 600 K bytes on IBM equipment. Normal run time is less than 4.0 CPU seconds.

N82-33334/5 PC **A03/MF A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
Recent Progress in Vstol Technology.
L. Roberts, and W. R. Deckert. Aug 82, 34p NAS 1.15:84238, A-8896, NASA-TM-84238

Progress in vertical and short takeoff and landing (V/STOL) aircraft technology, in particular, during the 1970 to 1980 period at Ames Research Center is discussed. Although only two kinds of V/STOL aircraft (the helicopter and the British direct lift Harrier) have achieved operational maturity, understanding of the technology has vastly improved during this 10 year period. To pursue an aggressive R and D program at a reasonable cost, it was decided to conduct extensive large scale testing in wind tunnel and flight simulation facilities, to develop low cost research aircraft using modified airframes or engines, and to involve other agencies and industry contractors in joint technical and funding arrangements. The STOL investigations include exploring STOL performance using the rotating cylinder flap concept, the augmentor wing, upon initiation of the Quiet Short Haul Research Aircraft program, the upper surface blown flap concept. The VTOL investigations were conducted using a tilt rotor aircraft, resulting in the XV-15 tilt rotor research aircraft. Direct jet lift is now being considered for application to future supersonic fighter aircraft.

N82-33338/6 PC **A11**/MF **A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg. Coll. of Engineering.
Rolling Flow Wind Tunnel Tests of F-18 Aircraft.
F. H. Lutze. Jun 80, 246p NAS 1.26:169344, NASA-CR-169344
Contract NAS1-15080

The lateral directional characteristics of an F-18 aircraft was investigated. Aerodynamic derivatives associated with pure roll rate, or the 'p' derivatives were obtained. The model is described and the procedures used to obtain and correct the data, and a graphical presentation of the results are presented. These results include graphs of the lateral directional static stability derivatives versus angle of attack, and the lateral directional force and moment coefficients versus nondimensional roll rate. Results are presented for several configurations including complete, complete without vertical tails, complete without horizontal tails, fuselage wing and fuselage alone. Each of these configuations was tested with and without wing leading edge extensions. The basic control surfaces were deflected and the results were investigated.

N82-33339/4 PC **A13**/MF **A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg. Coll. of Engineering.
Curved Flow Wind Tunnnel Test of F-18 Aircraft.
F. H. Lutze. Apr 80, 294p NAS 1.26:169345, VPI-AERO-108, NASA-CR-169345
Contract NAS1-15080

The curved flow capability of a stability wind tunnel was used to investigate the lateral directional characteristics of an F-18 aircraft. The model is described and the procedures used to obtain and correct the data and a graphical presentation of the results are presented. The results include graphs of lateral directional derivatives versus sideslip or static plots, the lateral directional static stability derivatives versus angle of attack, and finally the lateral directional derivatives versus nondimensional yaw rate for different angles of attack and sideslip. Results are presented for several configurations including complete, complete without vertical tails, complete without horizontal tails, fuselage wing and fuselage alone. Each of these were tested with and without wing leading edge extensions.

N82-33348/5 PC **A02**/MF **A02**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
Computational Aerodynamics and Design.
W. F. Ballhaus, Jr.. Aug 82, 23p NAS 1.15:84257, A-8954, NASA-TM-84257

The availability of supercomputers and the ingenuity of computational aerodynamics in design, and prospects for continued advancement are assessed.

N82-33373/3 PC **A03**/MF **A01**
Molusis (John A.), Ashford, CT.
Rotorcraft Blade Mode Damping Identification from Random Responses Using a Recursive Maximum Likelihood Algorithm.
Final Report.
J. A. Molusis. Sep 82, 49p NAS 1.26:3600, NASA-CR-3600
NASA ORDER L-26971-B

An on line technique is presented for the identification of rotor blade modal damping and frequency from rotorcraft random response test data. The identification technique is based upon a recursive maximum likelihood (RML) algorithm, which is demonstrated to have excellent convergence characteristics in the presence of random measurement noise and random excitation. The RML technique requires virtually no user interaction, provides accurate confidence bands on the parameter estimates, and can be used for continuous monitoring of modal damping during wind tunnel or flight testing. Results are presented from simulation random response data which quantify the identified parameter convergence behavior for various levels of random excitation. The data length required for acceptable parameter accuracy is shown to depend upon the amplitude of random response and the modal damping level. Random response amplitudes of 1.25 degrees to .05 degrees are investigated. The RML technique is applied to hingeless rotor test data. The inplane lag regressing mode is identified at different rotor speeds. The identification from the test data is compared with the simulation results and with other available estimates of frequency and damping.

N82-33374/1 PC **A03**/MF **A01**
Washington Univ., St. Louis, MO. Dept. of Mechanical Engineering.
Design of Helicopter Rotor Blades for Optimum Dynamic Characteristics.
Semiannual Status Report, 18 Jan. - 16 Jul. 1982.
D. A. Peters, T. Ko, A. E. Korn, and M. P. Rossow. 15 Sep 82, 33p NAS 1.26:169352, SASR-1, NASA-CR-169352
Contract NAG1-250
Prepared in Cooperation with Univ. Of Southern Illinois, Edwardsville.

The possibilities and the limitations of tailoring blade mass and stiffness distributions to give an optimum blade design in terms of weight, inertia, and dynamic characteristics are investigated. Changes in mass or stiffness distribution used to place rotor frequencies at desired locations are determined. Theoretical limits to the amount of frequency shift are established. Realistic constraints on blade properties based on weight, mass moment of inertia size, strength, and stability are formulated. The extent hub loads can be minimized by proper choice of EL distribution is determined. Configurations that are simple enough to yield clear, fundamental insights into the structural mechanisms but which are sufficiently complex to result in a realistic result for an optimum rotor blade are emphasized.

N82-33375/8 PC **A12**/MF **A01**
Douglas Aircraft Co., Long Beach, CA.
Advanced Turboprop Testbed Systems Study.
Final Report.
I. M. Goldsmith. Jul 82, 255p NAS 1.26:167895, ACEE-22-FR-1699A, NASA-CR-167895
Contract NAS3-22347

The proof of concept, feasibility, and verification of the advanced prop fan and of the integrated advanced prop fan aircraft are established. The use of existing hardware is compatible with having a successfully expedited testbed ready for flight. A prop fan testbed aircraft is definitely feasible and necessary for verification of prop fan/prop fan aircraft integrity. The Allison T701 is most suitable as a propulsor and modification of existing engine and propellier controls are adequate for the testbed. The airframer is considered the logical overall systems integrator of the testbed program.

N82-33398/0 PC **A05**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
A Ground-Simulator Investigation of Helicopter Longitudinal Flying Qualities for Instrument Approach.
J. V. Lebacqz, R. D. Forrest, and R. M. Gerdes. Sep 82, 91p NAS 1.15:84225, A-8983, NASA-TM-84225

A ground-simulation experiment was conducted to investigate the direct and interactive influences of several longitudinal static and dynamic stability parameters on helicopter flying qualities during terminal-area operations in instrument conditions. Variations that were examined included five levels of static control-position gradients ranging from stable to unstable; two levels of dynamic stability for the long-period oscillation; two levels of the steady-state pitch speed gradient; two levels of angle-of-attack stability and pitch-rate damping; and two levels of stability and control augmentation. These variations were examined initially in calm air and thin in simulated light-to-moderate turbulence and wind shear. Five pilots performed a total of 223 evaluations of these parameters for a representative microwave landing system precision approach task conducted in a dual-pilot crew-loading situation.

N82-33733/8 PC **A04**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Results from Tests of Three Prototype General Aviation Seats.
M. S. Williams, and E. L. Fasanella. Aug 82, 53p NAS 1.15:84533, NASA-TM-84533

Three types of energy absorbing general aviation seats were dynamically tested and evaluated for crash load attenuation. On the basis of the static and dynamic test results, it was recommended that the tubular frame seats be redesigned to initiate stroking at approximately 12 G's rather than the 20 to 25 G range. Lower density foam was recommended for the foam wedge passenger seat.

N82-33735/3 PC **A10**/MF **A01**
Textron Bell Helicopter, Fort Worth, TX.
Crashworthy Airframe Design Concepts: Fabrication and Testing.
Final Report, Apr. 1977 - May 1982.
J. D. Cronkhite, and V. L. Berry. Sep 82, 206p NAS 1.26:3603, NASA-CR-3603
Contract NAS1-14890

Crashworthy floor concepts applicable to general aviation aircraft metal airframe structures were investigated. Initially several energy absorbing lower fuselage structure concepts were evaluated. Full scale floor sections representative of a twin engine, general aviation airplane lower fuselage structure were designed and fabricated. The floors featured an upper high strength platform with an energy absorbing, crushable structure underneath. Eighteen floors were fabricated that incorporated five different crushable subfloor concepts. The floors were then evaluated through static and dynamic testing. Computer programs NASTRAN and KRASH were used for the static and dynamic analysis of the floor section designs. Two twin engine airplane fuselages were modified to incorporate the most promising crashworthy floor sections for test evaluation.

N82-33736/1 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Measured and Calculated Effects of Angle of Attack on the Transonic Flutter of a Supercritical Wing.
E. C. Yates, Jr., E. C. Wynne, and M. G. Farmer. Aug 82, 30p NAS 1.15:83276, NASA-TM-83276

For abstract see A82-30143.

N82-34189/2 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Supersonic Jet Noise Generated by Large Scale Instabilities.
J. M. Seiner, D. K. Mclaughlin, and C. H. Liu. Sep 82, 45p NAS 1.60:2072, L-15307, NASA-TP-2072

The role of large scale wavelike structures as the major mechanism for supersonic jet noise emission is examined. With the use of aerodynamic and acoustic data for low Reynolds number, supersonic jets at and below 70 thousand comparisons are made with flow fluctuation and acoustic measurements in high Reynolds number, supersonic jets. These comparisons show that a similar physical mechanism governs the generation of sound emitted in he principal noise direction. These experimental data are further compared with a linear instability theory whose prediction for the axial location of peak wave amplitude agrees satisfactorily with measured phased averaged flow fluctuation data in the low Reynolds number jets. The agreement between theory and experiment in the high Reynolds number flow differs as to the axial location for peak flow fluctuations and predicts an apparent origin for sound emission far upstream of the measured acoustic data.

PB83-119691 PC **A04**/MF **A01**
Factory Mutual Research Corp., Norwood, MA.
Computer Modeling of Aircraft Cabin Fire Phenomens.
M. A. Delichatsios, R. L. Alpert, L. Orloff, and M. K. Mathews. Oct 82, 65p NBS-GCR-82-404
Contract NB81-NADA-2007

A two-layer integral model is presented for the calculation of turbulent wall flows on a vertical wall including a burning wall. The turbulent flow is divided into inner and outer turbulent regimes. These regimes are matched on a dividing streamline after appropriate wall laws for the turbulent flow have been developed. Wall laws, which depend on the specific boundary conditions, are proposed for an adiabatic wall plume, with addition of an inert material at the wall and a burning wall. The present methodology could be used also to develop wall flow laws for a constant temperature or constant heat flux wall and the overfire region above a burning wall. Numerical results are presented for an adiabatic wall flow with constant buoyancy flux and a burning wall without appreciable radiation.

PB83-853911 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.

Aircraft Computer Simulation. July, 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for Jul 70-Nov 82.
Nov 82, 285p
Supersedes PB82-857210.

This bibliography contains citations concerning the use of computers for the mathematical modeling and simulation of aircraft components and systems. Topics include fuel consumption, electrical power systems, structural design of airframes and engine components, as well as hydraulic systems. (This updated bibliography contains 305 citations, 28 of which are new entries to the previous edition.)

PB83-854976 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Vibrational Analysis in Aerodynamics. 1972-November, 1982 (Citations from the International Aerospace Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 158p
Supersedes PB82-858531.Prepared in cooperation with the National Aeronautics and Space Administration, Washington, DC.

This bibliography contains citations concerned with design and performance relative to aerodynamic vibration. Among the topics discussed are torsion blade flutter; vibration generated by rudders, rotor blades, panels, air foils; vortex shedding; load control; and helicopter gust response flutter. Aircraft vibrational analyses by means of analog computer simulation, autoflight control systems, and structural dynamics of aircraft are included with consideration for flight vehicle vibration control and reduction. (This updated bibliography contains 144 citations, 17 of which are new entries to the previous edition.)

PB83-854984 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Vibrational Analysis in Aerodynamics. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 238p
Supersedes PB82-858556.

This bibliography contains citations concerning excitation and analysis techniques for flight flutter tests. Although fixed-wing aircraft, space flight vehicles, VTOL and V/STOL vehicles are included, helicopter generated vibration analysis is emphasized in this bibliography. Among the variations of flutter included are unsteady airloads, fluidelastic vibration, rotor blade in forward flight, turbomachine blades, composite wings, response of re-entry vehicles, tail vibration, hingeless helicopter rotors and hinge-type, propeller whirl and SST related vibration. Analysis by aeroelastic and dynamic finite element techniques and collocation methods by computer analysis are included relative to dynamic structural damping and computer graphics in aeronautical engineering to suppress aircraft and spacecraft vibration. (This updated bibliography contains 185 citations, 16 of which are new entries to the previous edition.)

1D. Aircraft Flight Control and Instrumentation

N82-33381/6 PC **A09**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
An Operational Evaluation of Head Up Displays for Civil Transport Operations. Nasa/FAA Phase 3 Report.
Final Report.
J. K. Lauber, R. S. Bray, R. L. Harrison, J. C. Hemingway, and B. C. Scott. Aug 82, 198p NAS 1.60:1815, A-8477, NASA-TP-1815

The advantages and disadvantages of head-up displays (HUDs) in commercial jet transport approach and landing operations was evaluated. Ten airline captains currently qualified in the B-727 aircraft flew a series of instrument landing system (ILS) and nonprecision approaches in a motion base simulator using both a flight director HUD concept and a flightpath HUD concept as well as conventional head-down instruments under a variety of environmental and operational conditions to assess: (1) the potential benefits of these HUDs in airline operations; (2) problems which might be associated with their use; and (3) flight crew training requirements and flight crew operating procedures suitable for use with the HUDs. Results are presented in terms of objective simulator based performance measures, subject pilot opinion and rating data, and observer data.

N82-33399/8 PC **A05**/MF **A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Electrical Engineering.
Study of an Automatic Trajectory Following Control System.
Final Report.
H. F. Vanlandingham, R. L. Moose, P. E. Zwicke, W. H. Lucas, and J. D. Brinkley. 31 Aug 82, 87p NAS 1.26:169361, NASA-CR-169361
Grant NSG-1354

The estimator part of the Modified Partitioned Adaptive Controller, MPAC, developed for the nonlinear B737 is shown to be adaptable to sensor failures. An investigation is made into the potential usefulness of the configuration detection technique used in the MPAC and the failure detection filter technique developed for detecting actuator and sensor failures for a linearized model with significant modeling errors such as the B737 model. A synopsis of the design procedure for failure detection filters is given and a decision technique for the failure detection filter is developed that determines how a noise plant output is associated with a line or plane characteristic of a failure. It is shown by computer simulation that the estimator part and the configuration detection part of the MPAC can readily adapt to actuator and sensor failures and that the failure detection filter technique cannot detect actuator or sensor failures accurately for this type of system because of the plant modeling errors. In addition it is shown that the decision technique developed for the failure detection filter can accurately determine the plant output is related to the characteristic line or plane in the presence of sensor noise.

N82-33400/4 PC **A04**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
Analysis of Several Glidepath and Speed Control Autopilot Concepts for a Powered Lift STOL Aircraft.
W. S. Hindson. Aug 82, 58p NAS 1.15:84282, A-9005, NASA-TM-84282

Longitudinal performance and control utilization data are compared for several different automatic approach autopilot implementations in a powered lift STOL aircraft. As few as two, to as many as four laws reflecting both backside and frontside control techniques. The data are developed from analysis and simulation, but represent configurations which were demonstrated in flight. Transient response characteristics from initial glidepath offsets are presented, along with system operation in turbulence. In furnishing quantitative data in controlled levels of simulated turbulence, these results provide a useful supplement to various flight investigations (including those employing manual control) that involved a comparison of control techniques in this type of aircraft.

2. AGRICULTURE

2B. Agricultural Economics

PB83-101535 PC **A03**/MF **A01**
Economic Research Service, Washington, DC. International Economics Div.
Sweden's Agricultural Policy.
Foreign Agricultural economic rept.,
Marshall H. Cohen. Oct 82, 45p FAER-175

Sweden's most recent farm bills (for 1981-82 and 1982-84) were designed to discourage surpluses of livestock products (which incur expensive export subsidies), to cut back sharply on consumer food subsidies and farmer compensation programs, and to modify the levies on livestock and dairy imports, making the levies more responsive to rapidly changing market conditions. The U.S. share of Swedish imports should remain at about its current level (9 percent in 1981). The chief U.S. exports are fruits, vegetables, nuts, and tobacco, which are relatively unaffected by Swedish import levies, and grains.

PB83-103689 PC **A03**/MF **A01**
Economic Research Service, Washington, DC. National Economics Div.
Agricultural Finance Review, Volume 42.
Oct 82, 50p
See also Volume 41, PB81-244238.

The passage of the Economic Recovery Tax Act of 1981 will enable most continuing farm operators to realize a significant reduction in their income tax liabilities. FLIPSIM 11 was utilized to simulate a typical farm in the Texas Southern High Plains with a resulting tax savings of $20,000 over a 10-year planning horizon.

PB83-106609 PC **A06**/MF **A01**
Economic Research Service, Washington, DC. National Economics Div.
Costs of Producing Potatoes - 1980 and 1981 with Projections for 1982,
Agricultural economic rept.,
Glenn A. Zepp. Oct 82, 105p AER-491

Costs of production for fresh potatoes will increase only slightly for 1982; substantially reduced seed costs should offset other operating cost increases. Processing potato costs should range from almost unchanged in the Red River Valley to a 4.2-percent increase in western Idaho. Central Wisconsin showed the lowest total cost for producing fresh potatoes, while Maine had a cost advantage over other producing areas for supplying fresh potatoes to northeastern U.S. markets. Eastern Idaho showed the highest cost per hundredweight for fresh potatoes. This study estimates costs for producing, storing, and packing potatoes in major U.S. production regions during 1980 and 1981 with projections for 1982.

PB83-117275 PC **A02**/MF **A01**
Economic Research Service, Washington, DC. International Economics Div.
Peru's Current Food Situation and 1983 Food Aid Needs,
Lisa J. Shapiro. Sep 82, 21p AGES-820914

The balance between food supplies and basic food needs has deteriorated significantly in Peru over the past decade. This paper examines its import requirements through commercial and concessional channels. It suggests an appropriate level and terms for a Public Law 480 agreement in 1983.

PB83-118596 PC **A03**/MF **A01**
Economic Research Service, Washington, DC. National Economics Div.
Temporal Considerations in Using Agricultural Commodity Data,
Ralph L. Parlett, and Joseph M. Roop. Sep 82, 27p AGES-820910

There are many different temporal concepts used to report agricultural data. However, for many purposes, aggregation of data from a single time-frame--usually calender--is required. Typically, calendar year prices are taken as simple averages over the appropriate months, implicitly ignoring the seasonal variation of marketings by giving equal weights to prices from all months. This paper constructs quantity weighted prices for quarterly and annual intervals and compares them to simple averages of farm prices. Some differences in the resulting series are identified. Weighting the prices removes a bias in simple average prices caused by not adjusting for fluctuations in quantities marketed throughout the year. Because this bias has a potential impact on aggregate agricultural indicators and models, the quantity weighted commodity prices should be considered in aggregate agricultural analysis.

PB83-125450 PC A03/MF A01
Economic Research Service, Washington, DC. National Economics Div.
Dairy: Outlook and Situation,
Clifford M. Carman. Sep 82, 27p DS-390
See also PB82-259771.

Dairy support price unchanged; new 50-cent deduction announced. The support price on October 1 will remain $13.10 per cwt for manufacturing grade milk with 3.67 percent fat ($12.80 at 3.5 percent fat). This support is the minimum allowed under new dairy legislation contained in the Omnibus Budget reconciliation Act of 1982. It is the same support price that was put into effect October 1, 1980. In addition, as authorized by the new legislation, the Secretary of Agriculture will implement a 50-cent-per-cwt deduction for all milk marketed beginning December 1.

PB83-125682 PC A03/MF A01
Economic Research Service, Washington, DC. National Economics Div.
Costs of Production and Processing Sugarbeets and Sugarcane - 1980-1981.
Staff rept.,
Hosein Shapouri, Luigi Angelo, and Frederic L. Hoff. Aug 82, 30p AGES-820802

U.S. production and processing costs for the 1980/81 crop, excluding land costs and net of byproduct credits, are estimated at 19.41 cents a pound of refined beet sugar and 18.38 cents a pound of raw cane sugar. Production costs, excluding land, on a net ton basis are estimated at $24.75 for sugarbeets and $25.25 for sugarcane. Processing costs are estimated at 13.20 cents a pound of refined beet sugar and 8.36 cents a pound of raw cane sugar.

PB83-126656 PC A04/MF A01
Economic Research Service, Washington, DC.
Agricultural Outlook,
Leland Scott. Oct 82, 54p AO-81
See also PB82-241878.

Agricultural economy-like last year, large crop supplies and a weaker-than-expected economy are dominating prospects for the new marketing year. Record U.S. production is now forecast for corn, wheat, and soybeans. Meanwhile, the July tax cut has not yet boosted the U.S. economy as anticipated. Besides dampening domestic demand, the slow recovery of the U.S. economy is also limiting foreign demand for grains and oilseeds.

PB83-126664 PC A03/MF A01
Economic Research Service, Washington, DC. National Economics Div.
Sugar and Sweetner: Outlook and Situation,
Robert D. Barry, and Fred Gray. Sep 82, 33p SSRV7N3
See also PB82-220195.

Record world sugar surplus is depressing prices. World centrifugal sugar production in 1981/82 has again been revised upward, to 97.9 million tons (raw value), 1.6 million above the previous estimate. Slow-growing consumption is forecast at 91 million tons. The resulting record surplus of nearly 7 million tons could push global stocks to 28.1 million-31 percent of estimated consumption and far above the 25 percent generally regarded as a good balance.

2C. Agricultural Engineering

PB83-119453 PC A99/MF A01
Cornell Univ., Ithaca, NY.
Planning Guide for Evaluating Agricultural Nonpoint Source Water Quality Controls.
Final rept. Feb 79-Feb 80,
Paul D. Robillard, Michael F. Walter, and Linda M. Bruckner. Sep 82, 744p EPA-600/3-82-021
Grant EPA-R-804925010

This manual is a guide for water quality planners in the evaluation and selection of agricultural nonpoint source controls for areas ranging in size from individual farms and subwatersheds to large regions. Such controls are specified in water quality plans developed in response to Section 208 of the 1972 Federal Water Pollution Control Act Amendments. Control practices are described for both irrigated and nonirrigated cropland. The physical and chemical nature of nonpoint source pollutants and the pathways by which these pollutants are transported from field to water body are examined. Pollutants discussed include nutrients, sediment, animal wastes, salts and pesticides. Controls involve tillage methods, cropping practices, and methods of pesticide and fertilizer application.

PB83-125195 PC A12/MF A01
Idaho Univ., Moscow.
Optimal Planning of Irrigation Distribution and Application Systems for a Large Irrigated Area.
Completion rept.,
Kyung H. Yoo, J. R. Busch, and C. E. Brockway. May 82, 252p W83-00616, OWRT-B-041-IDA(5)
Contract DI-14-34-0001-8079

Techniques were developed and applied to a large irrigated area near Idaho Falls in an attempt to obtain optimal solutions for multi-objective planning of this area. The techniques were developed to effectively inventory the area, determine the costs and operating characteristics of irrigation system components, and to obtain optimal system plans using mathematical programming. The mathematical model procedures resulted in optimal irrigation system plans which were based on different specified constraints (e.g.: overall system efficiency; water delivery cost to the system at the headgate; water diversion cost from the distribution system to on-farm application systems). The results were used to determine costs and configurations needed to meet specified efficiency levels.

PB83-125278 PC A06/MF A01
Nebraska Water Resources Center, Lincoln.
Improvement of Irrigation Scheduling Techniques for Corn with Variable Crop Maturity Range, Plant Population and Water Supply Availability,
Darrell G. Watts, and William L. Kranz. Jun 82, 122p W83-00624, OWRT-A-057-NEB(1)
Contract DI-14-34-0001-9029

Research was carried out to develop improved crop coefficient (CC) functions to assist calculation of evapotranspiration (ET) in the scheduling of corn irrigation. Hydraulic lysimeters were installed and were seeded to three maturity ranges of corn, with four populations of each maturity during several growing seasons. The ratio of crop ET to potential ET (ETP) was calculated to estimate points on the CC function at different growth cycle stages. The ETP was computed by a modified Penman equation calibrated in the region. Comparison was made with ET by alfalfa planted in two lysimeters. Partitioning of water use between evaporation and transpiration (T) was altered as populations increased, with more water use attributed to T.

2D. Agronomy and Horticulture

PB83-116947 PC A02/MF A01
Municipal Environmental Research Lab., Cincinnati, OH. Solid and Hazardous Waste Research Div.
Reclamation of Pyritic Waste,
Ronald D. Hill, Kenneth R. Hinkle, and M. Lynn Apel. 1982, 25p EPA-600/D-82-340
Prepared in cooperation with Industrial Environmental Research Lab., Research Triangle Park, NC., and Virginia State Water Control Board, Richmond.

The reclamation of land used for the disposal of pyritic mine waste utilizing sewage sludge as a soil conditioner has been studied in laboratory greenhouse studies and a full-scale demonstration project. Analysis of samples revealed that some of the mining waste had a pH as low as 1.8, and copper and zinc content as high as 10 mg/g, and 2 mg/g, respectively. Greenhouse column studies showed that mine waste treated with sewage sludge, agricultural limestone, and fertilizer supported a good grass growth and improved the quality of the leachate generated. Reclamation of 8 hectares of disturbed mine land began in 1976. Fair to good vegetative cover had been established on over 90 percent of the area by 1982. To assure success of the vegetation, yearly maintenance of the more toxic areas has been required. Maintenance includes addition of fertilizer and limestone, and in the worst area, irrigation during drought periods. Weeping lovegrass (Eragrostis curvula) and Fescue (Ky-31, Festuca elatior var. arundenacea) have been the most successful vegetation.

PB83-119008 PC A02/MF A01
Central Indian Medicinal Plants Organisation, Lucknow (India).
Belladonna and its Cultivation in India.
Farm bulletins 5 and 10,
Akhtar Husain. 1978, 15p

This booklet is a compilation of two pamphlets, one on Belladonna and the other on Rauvolfia Serpentina. Belladonna is one of the most important plant drugs used in modern medicine throughout the world. Rauvolfia Serpentina is one of the most important crude drugs used in modern medicine. The subjects covered for each plant are: Botany; soil and climate; field preparation; propagation; transplanting; irrigation; fertilizer application; interculture; diseases and pests; harvesting; drying and storage; active constituents; uses; economics of cultivation.

PB83-119255 PC A03/MF A01
Central Inst. of Medicinal and Aromatic Plants, Lucknow (India).
The Cultivation of Plants for Their Essential Oils: Java Citronella; Eucalyptus Citriodora Hook; Davana; Geranium; and French Basil.
Farm bulletin,
O. P. Virmani, Pratap Singh, M. R. Narayana, M. Sarwar, and A. K. Srivastava. 1980, 40p

This book is a compilation of five pamphlets on the cultivation of various plants for their essential oils. The plants are Java citronella, Eucalyptus citriodora, Davana, Geranium, and French Basil. For each plant the following topics are covered: Botany; soil and climate; nurseries; field and soil preparation; propagation; irrigation and weeding; manures and fertilizers; etc.

PB83-129486 PC A04
Intermountain Forest and Range Experiment Station, Ogden, UT.
Models to Estimate Revegetation Potentials of Land Surface Mined for Coal in the West.
General technical rept.,
Paul E. Packer, Chester E. Jensen, Edward L. Noble, and John A. Marshall. Aug 82, 75p FSGTR-INT-123

Practical criteria for measuring success of revegetation of land surface mined for coal in the West, namely, the amount of forage produced and the density of plant cover developed, are affected significantly by at least two major climatic factors that are not readily susceptible to alteration (precipitation and growing season length); by three properties of spoil materials that are subject to limited modification through management (potassium, sodium, and pH). Revegetation success is also influenced by seven revegetation treatments, each of which provides at least two management alternatives, and by the age of the vegetation. These characteristics account for from one-half to three-fourths of the total variance in forage production and plant cover density on these revegetated lands.

2E. Animal Husbandry

PB83-920800 Standing Order
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section IV. Veterinary Medicine. Updates.
Irregular repts.
1982, 1p
Supersedes PB82-920800.
Paper copy available on Standing Order, Deposit Account required. North American Continent price $35.00/year; all others write for quote. Single copies also available in paper copy only. Basic report available as PB83-920899.

The standing order allows one to obtain updates to Section IV of the Compliance Program Guidance Manual which provides plans and instructions to Field operations which are surveillance and/or compliance oriented and provide needed direction from Headquarters and Offices and Bureaus in accomplishing FDA's regulatory obligations for veterinary medicines and feeds. This section also includes the concept to the Manual and miscellaneous material relating to compliance functions.

PB83-920899 PC$15.00
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section IV. Veterinary Medicine.
Oct 82, 289p FDA/ACA-83/6D
Supersedes PB82-920899. Updates to basic report available as PB83-920800.

The FDA Compliance Program Guidance Manual provides a system for issuing and filing written program plans and instructions directed to Food and Drug Administration field operations for project implementation.

2F. Forestry

AD-A120 408/0 PC **A04/MF A01**
Army Engineer Waterways Experiment Station, Vicksburg, MS. Environmental Lab.
Ecological Investigation of a Greentree Reservoir in the Delta National Forest, Mississippi.
Final rept.,
Charles J. Newling. Sep 81, 70p Rept no. WES/MP/EL-81-5

A greentree reservoir under continuous dormant season flooding for 18 years was compared with an adjacent reference area to determine the effects of this type of flooding management on the plant community, soils, and bird populations of the area. Continuous greentree management over 18 years appeared to cause a predictable shift to more water-tolerant plant communities in the woody and herbaceous understory strata of the greentree reservoir. Because the design of the greentree reservoir resulted in slower drainage of water ponded on the reservoir by rain or backwater flooding during the growing season, neither dormant season flooding, growing season flooding, nor the interaction of both was identified as the sole cause of the community shift. Soils were very similar on both sites. Winter flooding of the greentree reservoir made it more attractive than the reference area to common grackles (Quiscalus quiscula) and highly attractive to waterfowl, but less attractive to the white-throated sparrow (Zonotrichia albicollis), a ground dweller. For other bird species, however, greentree reservoir management appeared to have little effect on species richness or mean population sizes.

DE82009495 PC **A05/MF A01**
BioEnergy Development Corp., Hilo, HI.
Eucalyptus Plantations for Energy Production in Hawaii. 1980 Annual Report, January 1980-December 1980.
C. D. Whitesell. 1980, 94p DOE/ET/20074-T7
Contract FC03-78ET20074

In 1980 200 acres of eucalyptus trees were planted for a research and development biomass energy plantation bringing the total area under cultivation to 300 acres. Of this total acreage, 90 acres or 30% was planted in experimental plots. The remaining 70% of the cultivated area was closely monitored to determine the economic cost/benefit ratio of large scale biomass energy production. In the large scale plantings, standard field practices were set up for all phases of production: nursery, clearing, planting, weed control and fertilization. These practices were constantly evaluated for potential improvements in efficiency and reduced cost. Promising experimental treatments were implemented on a large scale to test their effectiveness under field production conditions. In the experimental areas all scheduled data collection in 1980 has been completed and most measurements have been keypunched and analyzed. Soil samples and leaf samples have been analyzed for nutrient concentrations. Crop logging procedures have been set up to monitor tree growth through plant tissue analysis. An intensive computer search on biomass, nursery practices, harvesting equipment and herbicide applications has been completed through the services of the US Forest Service. (ERA citation 07:056547)

PB83-115618 PC **A03/MF A01**
Forest Service, Atlanta, GA. Southeastern Area, State and Private Forestry.
A Forester's Guide to Observing Wildlife Use of Forest Habitat in the South.
Forestry rept. (Final),
Nathan A. Byrd. Sep 81, 41p SA-FR-15
Color illustrations reproduced in black and white.

The report presents 10 chapters by different authors who share their expertise on observable signs and activities of selected wildlife in the South. The chapters include: furbearers, black bears, white-tailed deer, squirrels, a chapter on quail, doves and rabbits, and five additional chapters on woodcocks, cavity nesting birds, the raptors or birds of prey, wild turkeys, and other birds. Nearly 90 illustrations help identify wildlife habitats, signs of the presence of animals and birds in those habitats, or a specific animal or bird.

PB83-117424 PC **A09/MF A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg.
State Guides for Assessing Forest Land and Timber, 1977.
Interim technical pub.,
Samuel A. Carlan, Harry L. Haney, Jr., and John E. Gunter. Sep 82, 192p SA-TP-20

Procedures used by each of the 50 states for assessing taxes on forest land and timber are summarized, state by state. State tax officials provided information used for this publication, current as of December 31, 1976. Individuals interested in property tax questions may readily compare the practices and policies employed in different states.

PB83-118307 PC **A03/MF A01**
Intermountain Forest and Range Experiment Station, Ogden, UT.
Estimating Production Rates and Operating Costs of Timber Harvesting Equipment in the Northern Rockies.
General technical rept.,
Rulon B. Gardner. Sep 82, 33p FSGTR/INT-118

The report summarizes studies of ground, cable, and aerial logging systems in the Northern Rockies over a 15-year period. It provides nomographs and tables for calculating productivity and a system for comparing energy requirements.

PB83-124925 PC **A02/MF A01**
Northeastern Forest Experiment Station, Broomall, PA.
Measuring the Response of Conifer Seedlings to Soil Compaction Stress.
Forest Service research paper (Final),
Howard G. Halverson, and Robert P. Zisa. 1982, 10p NEFES/83-10, FSRP-NE-509

Evaluation of several growth responses showed that root penetration depth was best related to soil compaction stress. Conventional measures such as seedling height were not well related to soil compaction level, but seedling height can be used to predict root penetration. Selecting the proper growth variable is an important step in any seedling study.

PB83-125146 PC **A04/MF A01**
Arizona Univ., Tucson. School of Renewable Natural Resources.
Simulation of Nutrient and Heavy Metal Transport Capacity of Suspended Sediment,
Master's thesis,
William Andrew Gabbert. 1982, 59p W83-00609, OWRT-A-105-ARIZ(1)

Transport of nutrients and heavy metals by suspended sediments has commonly been ignored in studies of stream export from small watersheds. A prototypical computer simulation model was developed to aid watershed managers and land use planners in estimating the impact of alternative land management practices on nutrient and heavy metal losses due to transported sediments on forested watersheds. Geology and vegetation of a watershed were used as predictors of chemical constituent concentrations in transported sediments. Combinations of vegetation types and geologies considered in this study include: ponderosa pine forests on soil parent material of basalt, sandstone, granite or limestone, and mixed conifer forests on basalt.

PB83-127944 PC **A03/MF A01**
Northeastern Forest Experiment Station, Broomall, PA.
Pulpwood Production and Receipts in the Northeast, 1980: A Statistical Report.
Forest Service resource bulletin (Final),
Robert L. Nevel, Jr., and Richard H. Widmann. 1982, 26p FSRB-NE-72, NEFES/83-15

A canvass of the pulpmills in the 14 Northeastern states reveals that from 1979 to 1980, total pulpwood production rose to nearly 8-1/2 million cords and roundwood production to over 6 million cords; chipped residue production fell below 2-1/2 million cords. Mill receipts were 9.1 million cords--6.4 million in roundwood and 2.7 million in chips.

PB83-127951 PC **A03/MF A01**
Northeastern Forest Experiment Station, Broomall, PA.
Biomass Equations for Major Tree Species of the Northeast.
General technical rept. (Final),
Louise M. Tritton, and James W. Hornbeck. 1982, 50p NEFES/83-13, FSGTR-NE-69

Literature on biomass is reviewed, and 178 sets of published equations for 25 species common to the Northeastern United States are listed. On the basis of these equations, estimates of above ground oven-dry weight of trees from 2.5 to 50.0 cm diameter at breast height for each species are presented and discussed.

3. ASTRONOMY AND ASTROPHYSICS

3A. Astronomy

N82-34322/9 PC **A05/MF A01**
Mississippi State Univ., Mississippi State. Engineering and Industrial Research Station.
Analysis of Space Telescope Data Collection System.
Interim Final Report,1 Jul. 1981 - 31 Jul. 1982.
F. M. Ingels, and W. O. Schoggen. 1982, 72p NAS 1.26:162090, MSSU-EIRS-EE-82-3, NASA-CR-162090
Contract NAS8-33570

An analysis of the expected performance for the Multiple Access (MA) system is provided. The analysis covers the expected bit error rate performance, the effects of synchronization loss, the problem of self-interference, and the problem of phase ambiguity. The problem of false acceptance of a command word due to data inversion is discussed. A mathematical determination of the probability of accepting an erroneous command word due to a data inversion is presented. The problem is examined for three cases: (1) a data inversion only, (2) a data inversion and a random error within the same command word, and a block (up to 256 48-bit words) containing both a data inversion and a random error.

3B. Astrophysics

AD-A120 476/7 PC **A03/MF A01**
Pennsylvania State Univ., University Park. Dept. of Astronomy.
Stellar Analogs of Solar Activity.
Final rept. 15 Dec 79-15 Dec 81,
Lawrence W. Ramsey. 1 Jun 82, 33p AFGL-TR-82-0170
Contract F19628-80-C-0036

A fiber-coupled spectrograph (FSC) for moderate-resolution stellar observations has been designed, fabricated, and tested. The excellent short- and long-term stability of this instrument represents a significant advance in the state-of-the-art for high precision stellar spectrophotometry. A preliminary observational survey of the greatly enhanced analogs of solar activity that exist in flare stars and the RS CVn binaries has been performed using this instrument, and the starspot

model for explaining the photometric variability of these latter stars has been verified spectroscopically. (Author)

AD-A120 515/2 PC A05/MF A01
Stanford Univ., CA. Inst. for Plasma Research.
Invalidity of Local Thermodynamic Equilibrium for Electrons in the Solar Transition Region. I. Fokker-Planck Results,
Edward C. Shoub. Aug 82, 94p Rept no. SUIPR-930
Contract N00014-75-C-0673, Grant NGL-05-020-272
Sponsored in part by Grant NAGW-92.

An effective numerical method for solving boundary value problems for the Landau Fokker-Planck equation is developed and applied to calculating the electron velocity distribution function in model solar transition regions. Numerical results illustrating the speed, pitch angle and spatial dependence of the distribution function are presented. From these it is concluded that the widely-invoked assumption that in weakly inhomogeneous collisional plasma the angle-averaged distribution function remains close to local-Maxwellian distribution is incorrect. Instead, the distribution function forms an anisotropic, high velocity tail in the lower temperature regions due to the diffusion of fast electrons anti-parallel to the temperature gradient. It is shown that as a result of there being an excess of fast electrons in the low transition region (T < or about 3 x 10 to the 5th power K, say), inelastic electron-ion collision rates are significantly enhanced over the Maxwellian values. Attendant effects on the ionization balance of a typical metal (magnesium) are shown to be significant. Implications of the breakdown of the loca-Maxwellian approximation for several outstanding questions related to the solar transition region are discussed, including: energy balance in low transition region and upper chromosphere, the helium resonance line spectrum, the Schmahl-Orrall observation of continuum absorption by neutral hydrogen, and the origin of the 20,000 K temperature plateau.

AD-A120 524/4 PC A02/MF A01
Stanford Univ., CA. Inst. for Plasma Research.
On the Thermal Stability of Coronal Loop Plasma,
S. K. Antiochos, A. G. Emslie, E. C. Shoub, and C.-H. An. Aug 82, 23p Rept no. SUIPR-931
Contract N00014-75-C-0673, Grant NGL-05-020-272
Sponsored in part by Grant NAGW-92.

We consider the stability to thermal perturbation of static models of coronal loops. The effects of cool, radiatively stable material at the loop base are included. The linear stability turns out to be sensitive only to the boundary conditions assumed on the velocity at the loop base. The question of the appropriate boundary conditions is discussed, and we conclude that the free-surface condition (the pressure perturbation vanishes), rather than the rigid-wall (the velocity vanishes), is relevant to the solar case. We find that the static models are thermally unstable, with a growth time of the order of the coronal cooling time. The physical implications of these results for the solar corona and transition-region are discussed.

AD-A120 757/0 PC A02/MF A01
Air Force Geophysics Lab., Hanscom AFB, MA.
Infrared Mapping of the Galactic Plane. III. The Large-Scale Mid-Infrared Structure of W3, W4 and W5.
Harley A. Thronson, Jr., and Stephan D. Price. 26 Feb 82, 9p Rept no. AFGL-TR-82-0285
Pub. in Astronomical Jnl., v87 n9 p1288-1294 Sep 82. See also AD-A113 264.

No abstract available.

N82-33789/0 PC A09/MF A01
National Aeronautics and Space Administration, Washington, DC.
Activities in Planetary Geology for the Physical and Earth Sciences.
R. Dalli, and R. Greeley. 1982, 183p NAS 1.19:179, NASA-EP-179

A users guide for teaching activities in planetary geology, and for physical and earth sciences is presented. The following topics are discussed: cratering; aeolian processes; planetary atmospheres, in particular the Coriolis Effect and storm systems; photogeologic mapping of other planets, Moon provinces and stratigraphy, planets in stereo, land form mapping of Moon, Mercury and Mars, and geologic features of Mars.

N82-34313/8 PC A05/MF A01
Jet Propulsion Lab., Pasadena, CA.
A Bibliography of Planetary Geology Principal Investigators and Their Associates, 1981 - 1982.
Final Report.
J. B. Plescia. Sep 82, 97p NAS 1.26:3593, NASA-CR-3593
Sponsored by NASA.

Over 800 publications submitted by researchers supported through NASA's Planetary Geology Program are cited and an author/editor index is provided. Entries are listed under the following subjects: (1) general interest topics; (2) solar system, comets, asteroids, and small bodies; (3) geologic mapping, geomorphology, and stratigraphy; (4) structure, tectonics, geologic and geophysical evolution; (5) impact craters: morphology, density, and geologic studies; (6) volcanism; (7) fluvial, mass wasting, and periglacial processes; (8) Eolian studies; (9) regolith, volatile, atmosphere, and climate; (10) remote sensing, radar, and photometry; and (11) cartography, photogrammetry, geodesy, and altimetry.

N82-34314/6 PC A03/MF A01
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.
Einstein Observatory Solid State Spectrometer Observations of M87 and the Virgo Cluster.
S. M. Lea, R. F. Mushotzky, and S. S. Holt. May 82, 32p NAS 1.15:83946, NASA-TM-83946
Submitted for Publication.

X-ray observations of the galaxy M87 and of a region in the Virgo cluster displaced 7 minutes from the center of M87 are presented. X-ray spectra are obtained at these two locations with the slid state spectrometer onboard the Einstein Observatory. Emission lines were observed in both locations, indicating the presence of heavy elements at abundances approximately solar (to within a factor of 2). A temperature gradient, T increases from approximately 1.4 keV at the position of M87 to T approximately 3.35 keV 7' away, was detected. There is lower temperature thermal emission at the center of M87 with T approximately 0.6 keV, consistent with models for cooling flows in this cluster. In addition to the thermal emission, a power law component in the spectrum of M87, was detected consistent with that observed by HEAO-1, indicating that this component probably originates in the galaxy itself. The presence of intracluster gas having density approximately .001 cu cm and temperature approximately 30 million K is indicated.

N82-34315/3 PC A04/MF A01
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center.
Shuttle VLBI Experiment. Technical Working Group Summary Report.
S. H. Morgan, and D. H. Roberts. Jul 82, 53p NAS 1.15:82491, NASA-TM-82491

The gain in interferometric resolution of extragalactic sources at radio frequencies which can be achieved by placing a very long baseline interferometry (VLBI) antenna in space is quantitatively described and a VLBI demonstration experiment using a large deployable antenna, which if realized could be a very acceptable first venture for VLBI in space is discussed. A tutorial on VLBI, a summary of the technology available for the experiment, and a preliminary mission scenario are included.

N82-34316/1 PC A02/MF A01
Joint Inst. for Lab. Astrophysics, Boulder, CO.
Evidence for Extended Chromospheres Surrounding Red Giant Stars.
R. E. Stencel. 1982, 10p NAS 1.26:169349, NASA-CR-169349
Sponsored by NASA.

Observational evidence and theoretical arguments are summarized which indicate that regions of partially ionized hydrogen extending several stellar radii are an important feature of red giant and supergiant stars. The implications of the existence of extended chromospheres are examined in terms of the nature of the other atmospheres of, and mass loss from cool stars.

N82-34317/9 PC A02/MF A01
Joint Inst. for Lab. Astrophysics, Boulder, CO.
Ultraviolet and X-Ray Detection of the 56 Peg System (Ko 2P + Wd).
M. Schindler, R. E. Stencel, J. L. Linsky, G. Basri, and D. Helfand. 1982, 9p NAS 1.26:169351, NASA-CR-169351
Contracts NAG5-82, NGL-06-003-057

Both IUE short and long wavelength exposures of the 56 Peg system are discussed. This mild barium star has an X-ray luminosity of 3 x 10 to the 31st power ergs/1, comparable to the rapidly rotating RS CVn binary systems, yet lies in a region of the HR diagram where stellar X-rays are generally not observed. This cool, bright giant is not a rapid rotator and the key to understanding its emission lies in the recent discovery of its white dwarf companion. Accretion onto the white dwarf of approximately 0.1% of the stellar wind of the primary is sufficient to power an X-ray source of the observed luminosity. Reprocessing of the X-rays in the cool dense stellar wind explains the origin of the UV emission line spectrum, and may explain the time varying asymmetry of the Mg 2 kappa line profile that is observed. Graphs which show observed fluxes and wavelengths are discussed.

N82-34318/7 PC A02/MF A01
Joint Inst. for Lab. Astrophysics, Boulder, CO.
The Structure, Energy Balance, and Winds of Cool Stars.
J. L. Linsky. 1982, 11p NAS 1.26:169356, NASA-CR-169356
Contract NGL-06-003-057
Presented at the 3RD European Iue Conf., Madrid, May 1982.

The phenomena associated with magnetic fields in the Sun are summarized and it is shown that similar phenomena occur in cool stars. High dispersion spectra are providing unique information concerning densities, atmospheric extension, and emission line widths. A recent unanticipated discovery is that the transition lines are redshifted (an antiwind) in beta Dra (G2 Ib) and perhaps other stars. This is interpreted as indicating downflows in closed magnetic flux tubes as are seen in the solar flux tubes above sunspots. The G and K giants and supergiants are classified as active stars, quiet stars, or hybrid stars depending on whether their atmospheres are dominated by closed magnetic flux tubes, open field geometries, or a predominately open geometry with a few closed flux tubes embedded.

N82-34319/5 PC A99/MF A01
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.
Catalog of Infrared Observations.
D. Y. Gezari, M. Schmitz, and J. M. Mead. Apr 82, 640p NAS 1.15:83819, NASA-TM-83819

The infrared astronomical data base and its principal data product, the catalog of Infrared Observations (CIO), comprise a machine readable library of infrared (1 microns to 1000 microns astronomical observations. To date, over 1300 journal articles and 10 major survey catalogs are included in this data base, which contains about 55,000 individual observations of about 10,000 different infrared sources. Of these, some 8,000 sources are identifiable with visible objects, and about 2,000 do not have known visible counterparts.

N82-34320/3 PC A02/MF A01
Huygens Lab., Leiden (Netherlands).
Identification of the Emission Features Near 3.5 Microns in the Pre Main Sequence Star Hd 97048.
F. Baas, L. J. Allamandola, T. R. Geballe, S. E. Persson, and J. H. Lacy. 1982, 16p NAS 1.26:169379, NASA-CR-169379
Sponsored in Part by NASA, NSF and the Dutch Organization for the Advancement of Pure Research.

The spectrum of HD97048 was measured with a resolving power of 450 between 3.37 and 3.64 microns. The prominent feature near 3.5 microns is well resolved, with a peak at 3.53 microns and a wing extending to a shorter wavelength. The weaker feature near 3.4 microns is found to peak at 3.43 microns, in contrast to the 3.40 micron feature seen in other astronomical objects. The observed spectrum strongly resembles laboratory spectra of mixtures of monomeric and dimeric formaldehyde embedded in low temperature solids. Of various possible excitation mechanisms, ultraviolet pumped infrared fluorescence of formaldehyde in interstellar grains provides the best explanation for the observed spectrum of HD 97048.

N82-34323/7 PC **A02/MF A01**
Georgia Inst. of Tech., Atlanta. School of Geophysical Sciences.
Light Scattering Calculations for the Nephelometer Experiment on the 1981/1982 Jupiter Orbiter-Probe Mission.
Final Technical Report, 1 Mar. 1978 - 30 Nov. 1981.
G. W. Grams. Sep 82, 14p NAS 1.26:169418, NASA-CR-169418
Grant NSG-2306

A variety of studies were carried out to help establish the accuracy of quantities describing physical characteristics of cloud particles (such as size, shape, and composition) that are to be inferred from light scattering data obtained with the nephelameter experiment on the Galileo spacecraft. The objectives were to provide data for validating and testing procedures for analyzing the Galileo nephelameter data with light scattering observations in a variety of on-going laboratory and field measurement programs for which simultaneous observations of the physical characteristics of the scattering particles were available.

N82-34325/2 PC **A03/MF A01**
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.
A Theory of the IO Phase Asymmetry of the Jovian Decametric Radiation.
K. Hashimoto, and M. L. Goldstein. Aug 82, 34p NAS 1.15:83994, NASA-TM-83994
Submitted for Publication.

An explanation of an asymmetry in the occurrence probability of the Io-dependent Jovian decametric radiation is proposed. Io generates stronger Alfven waves toward the south when it is in the northern part of the torus. This wave then generates decametric radiation in the northern ionosphere after it reflects in the southern ionosphere. The asymmetry then results from computing the propagation time of the alfven wave along this trajectory. The ray paths of the decameter radiation are calculated using a three dimensional ray tracing program in the Jovian ionosphere. Variations in the expected probability plots are computer for two models of the Jovian ionosphere and global magnetic field, as well as for several choices of the ratio of the adiated frequency to the X-mode cutoff frequency.

N82-34327/8 PC **A02/MF A01**
Stanford Univ., CA. Inst. for Plasma Research.
On the Thermal Stability of Coronal Loop Plasma.
S. K. Antiochos, A. G. Emslie, E. C. Shoub, and C. H. An. Aug 82, 23p NAS 1.26:169347, SU-SUIPR-931, NASA-CR-169347
Contracts NGL-05-020-272, NAGW-92

The stability to thermal perturbation of static models of coronal loops is considered including the effects of cool, radiatively stable material at the loop base. The linear stability turns out to be sensitive only to the boundary conditions assumed on the velocity at the loop base. The question of the appropriate boundary conditions is discussed, and it is concluded that the free surface condition (the pressure perturbation vanishes), rather than the rigid wall (the velocity vanishes), is relevant to the solar case. The static models are found to be thermally unstable, with a growth time of the order of the coronal cooking time. The physical implications of these results for the solar corona and transition region are examined.

N82-34328/6 PC **A03/MF A01**
Stanford Univ., CA. Inst. for Plasma Research.
The Impulsive Phase of Solar Flares. 2: Characteristics of the Hard X-Rays.
J. Leach, and V. Petrosian. 1982, 48p NAS 1.26:169379, NASA-CR-169379
Grant NSG-7092, Contract NSF ATM-81-16989

The results of an investigation into the electron distribution in the general non-thermal models of solar flares were used to calculate the characteristics of the impulsive hard X-rays. The height distribution, the spectrum, the polarization, and directivity of the X-rays were observed and how these X-ray characteristics are affected by the parameters defining the model was investigated. An expression is obtained for the X-ray intensity as a function of source height which is an excellent fit under certain constraints. Some available data with spatial resolution are examined and it is shown that it is possible to reproduce these data adequately with the non-thermal model and to determine the values of the parameters describing the flares.

PB83-116174 PC **A04/MF A01**
National Oceanic and Atmospheric Administration, Boulder, CO. Space Environment Lab.
A Summary of Solar 1-8A Measurements from the SMS and GOES Satellites, 1977-1981,
S. D. Bouwer, R. F. Donnelly, J. Falcon, A. Quintana, and G. Caldwel. Jul 82, 75p NOAA-TM-ERL-SEL-62, NOAA-82083101

The 1-8A band of synodic full-disc solar x-rays (1-8A) W/(m sup 2) have been measured nearly continuously from 1975 to 1981 aboard the SMS-1, SMS-2, GOES-1, GOES-2, and GOES-3 satellites. These measurements are scheduled to continue in an on-going series of GOES satellites. The 1-8A band of X-rays are proportional to the emission measure at coronal heights at temperatures greater than 2,000,000 K. In the past, attention has been centered on using solar x-ray measurements in the detection and description of solar flares and their ionospheric effects. Here we center on a practical method of describing solar 1-8A mean and background X-ray measurements in a continuous time series to describe long-term solar variability. Intercomparisons of the satellites using linear regression techniques and a useful background coronal index are described. Sources of error and statistical information on relative accuracy are discussed. Data are presented in monthly plots of hourly averages, in tables of daily mean and background indices, and in comparison to the Ottawa 10.7 cm radio flux.

PB83-120311 PC **A03/MF A01**
National Geophysical and Solar-Terrestrial Data Center, Boulder, CO.
Solar-Geophysical Data Number 455, July 1982. Part II (Comprehensive Reports). Data for January 1982 and Miscellanea,
Helen E. Coffey. Jul 82, 43p SGD-455-PT-2, NOAA-82091604
See also PB83-120329.

Contents: Solar radio emission; Solar x-ray radiation; Mass ejections from the sun; Active regions 8 November 1981 - 2 January 1982; Synoptic solar maps 8 November 1981 - 2 January 1982.

PB83-120329 PC **A09/MF A01**
National Geophysical and Solar-Terrestrial Data Center, Boulder, CO.
Solar-Geophysical Data Number 455, July 1982. Part I (Prompt Reports). Data for June 1982, May 1982 and Late Data,
Helen E. Coffey. Jun 82, 179p SGD-455-PT-1, NOAA-82091603
See also PB82-262692 and PB83-120311.

The following topics are included: Alert periods; Daily solar indices; Solar flares; Solar radio emission; Solar wind measurements; Coronal holes; Inferred interplanetary magnetic field polarities; Mean solar magnetic field; Daily solar activity centers; Sudden ionospheric disturbances; Cosmic rays; Geomagnetic indices; Radio propagation indices.

4. ATMOSPHERIC SCIENCES

4A. Atmospheric Physics

AD-A120 487/4 PC **A04/MF A01**
Scripps Institution of Oceanography, La Jolla, CA. Visibility Lab.
An Analysis of Natural Variations in European Sky and Terrain Radiance Measurements.
Interim rept.,
Richard W. Johnson, and Wayne S. Hering. Sep 81, 58p SIO-82-6, SCIENTIFIC-20, AFGL-TR-81-0317
Contract F19628-78-C-0200
See also Rept. no. AFGL-TR-81-0275 dated Aug 81, AD-A114 637.

A data set, first described in AFGL-TR-81-0275, Johnson (1981), which contains nearly 500 arrays representing measurements of sky and terrain radiance values, is reviewed and further illustrated with respect to naturally occurring radiance variations. The measurements were made using radiometer systems mounted on a C-130 aircraft during a series of European flights associated with the NATO Program OPAQUE, Fenn (1978) and Johnson et al. (1979). Radiance measurements throughout the 4 pi field surrounding the aircraft during seventeen separate flight episodes are presented and discussed with respect to their variability as a function of altitude, look angle, cloud cover and spectral band. The measurements were made in spectral bands having mean wavelengths of 478, 577, 664 and 765 nm, and under meteorological conditions ranging from fully overcast to clear and cloudfree. With appropriate caveats, examples of typical overcast, broken cloud and clear day radiance distributions are illustrated. Whereas these data illustrate substantial variations in the radiance distribution from day to day, there are determinable patterns that may provide boundary conditions for a very generalized attempt of classification. Thus, as were the data displayed in the earlier companion report, Johnson (1981), these data are appropriate for use in the development of operationally useful predictive models as illustrated in Hering (1981).

AD-A120 528/5 PC **A02/MF A01**
Utah State Univ., Logan. Center for Atmospheric and Space Sciences.
Observations of the Diurnal Dependence of the High-Latitude F Region Ion Density by DMSP Satellites,
J. J. Sojka, W. J. Raitt, and R. W. Schunk. 29 May 81, 10p AFGL-TR-82-0300
Contract F19628-79-C-0025
Pub. in Jnl. of Geophysical Research, v87 nA3 p1711-1718, 1 Mar 82.

No abstract available.

AD-A120 557/4 PC **A02/MF A01**
Iowa Univ., Iowa City. Dept. of Physics and Astronomy.
Polar Views of the Earth's Aurora with Dynamics Explorer,
L. A. Frank, J. D. Craven, J. L. Burch, and J. D. Winningham. 1 Jun 82, 6p
Contracts N00014-76-C-0016, NAS5-25689
Pub. in Geophysical Research Letters, v9 n9 p1001-1004 Sep 82. Original contains color plates: All DTIC and NTIS reproductions will be in black and white.

No abstract available.

AD-A120 558/2 PC **A02/MF A01**
Iowa Univ., Iowa City. Dept. of Physics and Astronomy.
Global Observations of a SAR Arc,
J. D. Craven, L. A. Frank, and K. L. Ackerson. 12 Jul 82, 6p
Contracts N00014-76-C-0016, NAS5-25689
Pub. in Geophysical Research Letters, v9 n9 p961-964 Sep 82. Original contains color plates: All DTIC and NTIS reproductions will be in black and white.

No abstract available.

AD-A120 637/4 PC **A03/MF A01**
Iowa Univ., Iowa City. Dept. of Physics and Astronomy.
Global Auroral Imaging Instrumentation for the Dynamics Explorer Mission,
Research rept.,
L. A. Frank, J. D. Craven, K. L. Ackerson, M. R. English, and R. H. Eather. 11 May 81, 27p Rept no. U. OF IOWA-81-5
Contract N00014-76-C-0016, Grant NSF-NAS5-24293
Pub.in Space Science Instrumentation, v5 p369-393 1981. Supersedes AD-A099 748.

No abstract available.

N82-33794/0 PC **A03/MF A01**
Instituto de Pesquisas Espaciais, Sao Jose dos Campos (Brazil).
Study of Atmospheric Diffusion Using Landsat Estudo DA Difusao Atmosferica Usando Imagens Do Satelite Landsat.
J. A. Torsani, and Y. Viswanadham. Feb 82, 32p INPE-2335-PRE/082, NASA-CR-169325
Text in Portugese. Submitted for Publication Sponsored by NASA. Original Contains Color Illustrations.

The parameters of diffusion patterns of atmospheric pollutants under different conditions were investigated for use in the Gaussian model for calculation of pollution concentration. Value for the divergence pattern of concentration distribution along the Y axis were determined using LANDSAT images. Multispectral scanner images of a point source plume having known characteristics, wind and temperature data, and cloud cover and solar elevation data provided by LANDSAT, were analyzed using the 1-100 system for image analysis. These measured values are compared with pollution transport as predicted by the Pasquill-Gifford, Juelich, and Hoegstroem atmospheric models.

N82-33918/5 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
A Tutorial Solution to Scattering of Radiation in a Thin Atmosphere Bounded Below by a Diffusely Reflecting, Absorbing Surface.
J. J. Buglia. Sep 82, 29p NAS 1.60:2077, L-15432, NASA-TP-2077

A simple tutorial method, based on a photon tracking procedure, is described to determine the spherical albedo for a thin atmosphere overlying a reflecting surface. This procedure is used to provide a physical structure with which to interpret the more detailed but highly mathematical analyses presented. The final equations are shown to be in good numerical agreement with more exact solutions for thin atmospheres.

N82-33920/1 PC **A02**/MF **A01**
Wyoming Univ., Laramie.
Measurement of Tropospheric Carbonyl Sulfide by Microwave Spectrometry.
Final Report.
D. J. Hofmann, and E. A. Rinehart. 10 Dec 81, 13p NAS 1.26:169417, NASA-CR-169417
Contract NAG2-33

Microwave rotational spectrometry is used to measure tropospheric carbonyl sulfide. The instrument and techniques for using it are described.

N82-33948/2 PC **A04**/MF **A01**
Wyoming Univ., Laramie. Dept. of Atmospheric Science.
Ice Forming Experiment.
Final Report, 1976 - 1981.
G. Vali. 30 Jul 82, 74p NAS 1.26:170623, NASA-CR-170623
Contract NAS8-33150

A low gravity experiment to assess the effect of the presence of supercooled cloud droplets on the diffusional growth rate of ice crystals is described. The theoretical work and the feasibility studies are summarized. The nucleation of ice crystals in supercooled clouds is also discussed.

PB83-854463 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Atmospheric Aerosols: Mathematical Modeling and Computerized Simulation. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 194p
Supersedes PB82-860255.

Citations in this bibliography cover principles, techniques, and results of mathematical modeling and computerized simulation of atmospheric aerosols. The compositions, properties, and various effects of the aerosols are considered. Physical and chemical atmospheric processes involving aerosols are modeled. (This updated bibliography contains 192 citations, 32 of which are new entries to the previous edition.)

PB83-854471 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Atmospheric Aerosols: Mathematical Modeling and Computerized Simulation. 1972-November, 1982 (Citations from the International Aerospace Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 342p
Supersedes PB82-860248.Prepared in cooperation with the National Aeronautics and Space Administration, Washington, DC.

This bibliography covers mathematical modeling and computerized simulation of atmospheric aerosols of various compositions from a wide variety of sources. The optical, chemical, and physical properties and the effects of aerosols are modeled and physical interpretations rendered. Some attention is given to extraterrestrial planetary aerosols. (This updated bibliography contains 354 citations, 24 of which are new entries to the previous edition.)

PB83-854752 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Atmospheric Aerosols: Mathematical Modeling and Computerized Simulation. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 437p
Supersedes PB82-860230.

This bibliography cites reports and studies concerning mathematical modeling and computerized simulation of air polluting and light obstructing atmospheric aerosols. The compositions and characteristics, and the thermal, radiative, and various other effects of the aerosols are considered. Attention is also given to analyses of models. (This updated bibliography contains 341 citations, 49 of which are new entries to the previous edition.)

4B. Meteorology

AD-A120 449/4 PC **A06**/MF **A01**
Naval Postgraduate School, Monterey, CA.
Application of Quasi-Lagrangian Diagnostics to the Study of Numerically-Simulated Oceanic Cyclones.
Master's thesis,
William C. Tallman. Jun 82, 122p

A study of two oceanic extratropical cyclones, generated by the Navy Operational Atmospheric Prediction System (NOGAPS) model reveals a simultaneous development of the upper- and lower-tropospheric features while these features maintain their positions relative to each other. These cyclones also develop extreme shear in most synoptic fields after 120 hours of numerical simulation. The mass budgets of these cyclones show a concentration of inward lateral transport (convergence) in the lowest model layer and outward lateral transport (divergence) in a layer centered near 300 mb. Time sections of lateral transport, vertical velocity and mass tendency reveal that these cyclones develop in two phases--an explosive cyclogenesis phase, and a quasi-steady state phase. These time sections also reveal a 12-hour cyclic pattern embedded within the two phases of cyclone evolution. This 12-hour cyclic pattern is not evident in the map sequences of the surface pressure.

AD-A120 603/6 PC **A02**/MF **A01**
Washington Univ., Seattle. Dept. of Atmospheric Sciences.
A Model of Longwave Irradiance for Use with Surface Observations.
Technical rept.,
R. J. Lind, and K. B. Katsaros. 28 Dec 81, 11p Rept no. CONTRIB-605
Contracts N00014-80-C-0252, N00014-75-C-0502
Pub. in Jnl. of Applied Meteorology, v12 n7 p1015-1023 Jul 82.

No abstract available.

AD-A120 759/6 PC **A02**/MF **A01**
Air Force Geophysics Lab., Hanscom AFB, MA.
On the Solution of the Hydrostatic Relation in the Spectral Model of the National Meteorological Center,
Chien-Hsiung Yang. 6 Nov 81, 5p Rept no. AFGL-TR-82-0286
Pub. in Monthly Weather Review, v110 n8 p1099-1102 Aug 82.

No abstract available.

AD-A120 804/0 PC **A04**/MF **A01**
Army Electronics Research and Development Command, White Sands Missile Range, NM. Atmospheric Sciences Lab.
20405A Assault Breaker, Missile Number 0010, Round Number M8.
Meteorological data rept.,
Donald C. Keller. 2 Sep 82, 54p Rept no. ERADCOM/ASL-DR-1256

Meteorological data gathered for the launching of the 20405A Assault Breaker, Missile Number 0010, Round Number M8 are presented in tabular form.

AD-A120 859/4 PC **A03**/MF **A01**
Army Electronics Research and Development Command, White Sands Missile Range, NM. Atmospheric Sciences Lab.
19319A MLRS, Missile Numbers BN-201, BN-156, BN-221, BN-220, BN-224, BN-217, Round Numbers V-312/PQ-52, V-313/PQ-53, V-314/PQ-54, V-315/PQ-55, V-316/PQ-56, V-317/PQ-57, 8 September 1982.
Meteorological data rept.,
Donald C. Keller. Sep 82, 27p Rept no. ERADCOM/ASL-DR-1257

Meterological data gathered for the launching of the 19319A MLRS, Missile BN-201, BN-156, BN-221, BN-220, BN-224, BN-217, Round V-312/PQ-52 thru V-317/PQ-57 presented in tabular form. (Author)

N82-33946/6 PC **A06**/MF **A01**
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.
The Geologic Record of Climatic Change.
T. J. Crowley. Jun 82, 154p NAS 1.15:83956, NASA-TM-83956

Major results from paleoclimatic investigations are investigated, and background material is included. The time interval surveyed extends from the formation of the Earth 4.6 billion years ago to the development of the instrumental record.

N82-33947/4 PC **A07**/MF **A01**
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.
The Multi-Parameter Remote Measurement of Rainfall.
D. Atlas, C. W. Ulbrich, and R. Meneghini. Jul 82, 134p NAS 1.15:83971, NASA-TM-83971
Contract NAG5-232
Submitted for Publication Sponsored in Part by Commission F of the International Scientific Radio Union. Presented at the Conf. On Multiple Parameter Radar Measurements of Precipitation, Bournemouth, England, 23-27 Aug. 1982.

The measurement of rainfall by remote sensors is investigated. One parameter radar rainfall measurement is limited because both reflectivity and rain rate are dependent on at least two parameters of the drop size distribution (DSD), i.e., representative raindrop size and number concentration. A generalized rain parameter diagram is developed which includes a third distribution parameter, the breadth of the DSD, to better specify rain rate and all possible remote variables. Simulations show the improvement in accuracy attainable through the use of combinations of two and three remote measurables. The spectrum of remote measurables is reviewed. These include path integrated techniques of radiometry and of microwave and optical attenuation.

PB83-116673 PC **A11**/MF **A01**
National Oceanic and Atmospheric Administration, Boulder, CO. Environmental Research Labs.
Boulder Upslope Cloud Observation Experiment,
Earl E. Gossard. Jun 82, 243p NOAA-82101203

The goals of this observational program were to provide the data base to: Learn more about the role of ice crystals in the formation of clouds and precipitation under upslope conditions. Calibrate the various remote sensing systems against reliable in situ devices in a steady, homogeneous cloud environment, and to evaluate their practical applicability for observing the role of ice crystals and cloud microphysics in the evolution of upslope precipitation.

PB83-116707 PC **A09**/MF **A01**
Atmospherics, Inc., Fresno, CA..

SCPP Data Collection and Analysis for the Period 1 September 1981 through 31 August 1982.
Interim progress rept. no. 4, 1 Sep 81-31 Aug 82,
Mark Solak, Tom Henderson, Rand Allan, Susan Barnes, and Mark Henderson. 27 Aug 82, 188p
Contract DI-9-07-85-V0020
See also PB82-119587.

This report describes the data collection and analysis tasks performed by Atmospherics Incorporated (AI) during the period 1 September 1981 through 31 August 1982 within the Sierra Cooperative Pilot Project (SCPP). The major categories of support by AI included the installation, operation and maintenance of, plus data collection and analysis from, (1) a network of precipitation gages and (2) ground-based instrumentation for detection of supercooled liquid water. A research paper prepared as part of the design work, describing precipitation characteristics of SCPP-1 clouds and the precipitation evaluation techniques developed for use in the experiment, is included.

PB83-116723 PC **A12/MF A01**
National Weather Service, Silver Spring, MD.
NOAA/NWS Catalog of Meteorological Bulletins. Section 1: KWBC-Originated Meteorological Bulletins (2nd Edition).
Communications handbook no. 6.
Jun 82, 263p NOAA-82091302
See also PB80-183684, and PB83-116731.

Communications Handbook No. 6, the NOAA/NWS Catalog of Meteorological Bulletins, is a three-section reference manual. Section 1 contains all meteorological bulletins originated at KWBC. Section 2 contains foreign meteorological bulletins which are distributed domestically. Section 3 contains aviation-oriented meteorological bulletins. A description of the bulletins, the approximate time of transmission, generation, observation or valid time, and the code used are listed for each entry.

PB83-116731 PC **A08/MF A01**
National Weather Service, Silver Spring, MD.
NOAA/NWS Catalog of Meteorological Bulletins. Section 3: Aviation-Oriented Meteorological Bulletins (1st Edition).
Communications handbook no. 6.
Jun 82, 167p
See also PB83-116723.

Communications Handbook No. 6, the NOAA/NWS Catalog of Meteorological Bulletins, is a three-section reference manual. Section 1 contains all meteorological bulletins originated at KWBC. Section 2 contains foreign meteorological bulletins which are distributed domestically. Section 3 contains aviation-oriented meteorological bulletins. A description of the bulletins, the approximate time of transmission, generation, observation or valid time, and the code used are listed for each entry.

PB83-117515 PC **A09/MF A01**
National Weather Service, Silver Spring, MD.
National Weather Service Radar Code User's Guide.
Nov 82, 189p NOAA-82101107
Portions of this document are not fully legible.

Effective November 1, 1982, the National Weather Service adopted a new radar reporting code which is entirely digital. This new code is similar to, but does not replace the one currently used at the four FAA Air Route Traffic Control Centers (ARTCC's) in the West. An automated radar summary chart is being produced by computer using the coded radar observations. This chart is more timely and accurate than the old hand-drawn chart. Three teletypewriter plots, or paper doll messages, are also made based on the radar observations. One is a plot of the current intensities. The other two are 3- and 4-hour intensity sums. This User's Guide contains not only a detailed description of the radar reporting code, including examples, but also descriptions of the automated radar summary chart and the teletypewriter plots.

PB83-118166 PC **A09/MF A01**
National Weather Service, Silver Spring, MD. Office of Hydrology.
Application of Probable Maximum Precipitation Estimates - United States East of the 105th Meridian.
Hydrometeorological rept.,
E. M. Hansen, L. C. Schreiner, and J. F. Miller. Aug 82, 182p NOAA-NWS-HR-52
Sponsored in part by Corps of Engineers, Washington, DC.

This study provides a stepwise approach to the temporal and spatial distribution of probable maximum precipitation (PMP) estimates derived from Hydrometeorological Report No. 51, 'Probable Maximum Precipitation Estimates - United States East of the 105th Meridian.' Included are discussions of the shape and orientation of isohyetal patterns for major rainfalls of record. An elliptical isohyetal pattern with a ratio of major to minor axes of 2.5 to 1 is recommended, and a procedure is outlined for obtaining appropriate isohyet values.

PB83-118240 PC **A06/MF A01**
National Weather Service, Silver Spring, MD.
Pertinent Meteorological and Hurricane Tide Data for Hurricane Carla,
Francis P. Ho, and John F. Miller. Aug 82, 119p
NOAA-TR-NWS-32, NOAA-82101104

All available meteorological data have been analyzed to provide information as accurate as possible for use in dynamic storm surge models. Detailed analyses are presented of the storm track, forward speed, central pressure, and radius to maximum wind. Particular attention is given to the period surrounding landfall. Tide gage and high water mark data are presented to give both a time history and geographic depiction of the storm surge.

PB83-119131 PC **A99/MF A01**
National Weather Service, Silver Spring, MD.
NOAA/NWS Catalog of Meteorological Bulletins. Section 2. Foreign Meteorological Bulletins.
Communications handbook no. 6.
Sep 82, 648p NOAA-82102002

The purpose of this handbook is to enable users to identify the contents of: (1) various domestic products which are generated by or available through the U.S. National Meteorological Center facilities, (2) various foreign products which are distributed domestically, and (3) various aviation-oriented products.

PB83-119446 PC **A13/MF A01**
Montanta Dept. of Natural Resources and Conservation, Helena.
State of Montana Activities in the High Plains Cooperative Program: 1975-1980.
Final rept.,
Gerhard M. Knudsen, and Richard M. Moy. Apr 81, 288p
Contract DI-14-06-D-7577

Efforst of the State of Montana in the Miles City area of eastern Montana which pertain to the High Plains Cooperative Program (HIPLEX) of Project Skywater are reported. Associated impact assessment studies were conducted which were designed to estimate the potential effects of warm season weather modification on major ecosystems of the Northern High Plains. Activities needed to facilitate public involvement in HIPLEX were maintained since the outset of the program.

PB83-120337 PC **A05**
National Oceanic and Atmospheric Administration, Washington, DC. Environmental Data and Information Service.
Environmental Satellite Imagery, June 1982.
Sep 82, 97p KMRD-5.4-8206, NOAA-82093002
See also PB83-103861. Key to Meteorological Records Documentation.

The Key to Meteorological Records Documentation (KMRD) No. 5.4 Series is issued monthly to describe current cloud data obtained by NOAA's operational environmental satellites. It contains daily global satellite imagery in condensed form as a guide to data stored in the NOAA archive, and is designed to help users select data for research and climatological use.

PB83-120345 PC **A05**
National Oceanic and Atmospheric Administration, Washington, DC. Environmental Data and Information Service.
Environmental Satellite Imagery, May 1982.
Aug 82, 97p KMRD-5.4-8205, NOAA-82093001
Key to Meteorological Records Documentation. See also PB83-120337.

The Key to Meteorological Records Documentation (KMRD) No. 5.4 Series is issued monthly to describe current cloud data obtained by NOAA's operational environmental satellites. It contains daily global satellite imagery in condensed form as a guide to data stored in the NOAA archive, and is designed to help users select data for research and climatological use.

PB83-122440 PC **A07**
National Weather Service, Silver Spring, MD.
Evaporation Atlas for the Contiguous 48 United States,
Richard K. Farnsworth, Edwin S. Thompson, and Eugene L. Peck. Jun 82, 147p NOAA-TR-NWS-33

Maps are presented showing the areal distribution in the contiguous 48 states of evaporation (1) observed from Class A pans from May through Octobsr, (2) estimated for a free water surface (FWS) with negligible heat storage from May through October, and (3) estimated for an FWS for the entire year. A map is presented of coefficients to convert from pan evaporation to FWS evaporation. Sources of data, analyses of the maps, and limitations on their use are described.

PB83-124545 PC **A06**
National Oceanic and Atmospheric Administration, Washington, DC. Environmental Data and Information Service.
Environmental Satellite Imagery, July 1982.
Sep 82, 103p KMRD-5.4-8207, NOAA-82101206
See also PB83-103861. Key to Meteorogical Records Documentation.

The Key to Meteorological Records Documentation (KMRD) No. 5.4 Series is issued monthly to describe current cloud data obtained by NOAA's operational environmental satellites. It contains daily global satellite imagery in condensed form as a guide to data stored in the NOAA archive, and is designed to help users select data for research and climatological use.

PB83-124727 PC **A99/MF A01**
National Severe Storms Lab., Norman, OK.
Thunderstorms: A Social, Scientific, and Technological Documentary, Volume II. Thunderstorm Morphology and Dynamics,
Edwin Kessler. Feb 82, 610p NOAA-82092206
See also Volume 1, PB82-197336.

The report, the second volume of a comprehensive three-volume work, presents the authors understanding of the form and distribution of thunderstorms and of their associated physical processes: thermal, dynamical, hygrological, and electrical. This work was begun in 1976, but chapters were completed at different times. All have been reviewed by their authors during 1981.

5. BEHAVIORAL AND SOCIAL SCIENCES

5A. Administration and Management

AD-A120 568/1 PC **A05/MF A01**
Georgia Inst. of Tech., Atlanta. School of Industrial and Systems Engineering.
An Application of Resource Allocation Methodology to Army R&D Project Management.
Final rept. 30 Dec 80-30 Sep 81,
Leslie G. Callahan, Jr., and Stephen T. Baranzyk. Nov 81, 94p DRSMI/RD-CR-82-13, SBI-AD-E590 305
Contract DAAH01-81-D-A003

This research was directed at developing an improved procedure for the allocation of financial resources among competing research and development projects under the constraints of decrement funding, and the requirement for providing minimum support in two

functional areas. A new methodology was developed that transformed a prioritized project list of ordinal ranks from the currently used zero-base budgeting procedures to scaled utility values. This methodology used a binary integer computer program which maximizes the investment return of projects selected, and maintains the viability of functional laboraory areas. The report contains the complete computer code that was developed to demonstrate the procedure using FY '81 data related to the R&D Laboratories at the U. S. Army Missile Command. (Author)

AD-A120 640/8 PC **A06/MF A01**
Construction Engineering Research Lab. (Army), Champaign, IL.
Construction Contract Provisions Analysis.
Final technical rept.,
Michael J. O'Connor, Glenn E. Colwell, III , L. Michael Golish, and Michael G. Carroll. Sep 82, 110p Rept no. CERL-TR-P-137

This study surveyed Corps of Engineers divisions and districts, eight general contracting firms, and the Associated General Contractors of America to identify any clauses currently being used in the Special Provision (SP) and General Requirement (GR) sections of contract specifications they considered unnecessary, unproductive, or excessively burdensome and costly. The survey identified many problem areas. This report addresses, in detail, the 13 most prominent problems, including recommended solutions. More important, the report addresses weaknesses found in the mechanism employed to produce project SPs and GRs. These weaknesses are responsible for allowing the present discrepancies not only to exist, but also to have gone essentially undetected. Improvements to the mechanism, designed to preclude recurrence of these or similar problems, are an essential part of this study's recommendations. (Author)

AD-A120 811/5 PC **A24/MF A01**
Deputy Chief of Staff for Research, Development and Acquisition (Army), Washington, DC.
Proceedings of the 1982 Army Science Conference Held at the United States Military Academy, West Point, New York on 15-18 June 1982. Volume I. Principal Authors A through G.
18 Jun 82, 551p
See also Volume 2, AD-A120 812.

These Proceedings of the 1982 Army Science Conference are a compilation of all papers presented at the conference and the supplemental papers that were submitted. The Proceedings consist of four volumes, with Volumes I through III unclassified, and Volume IV classified.

AD-A120 812/3 PC **A20/MF A01**
Deputy Chief of Staff for Research, Development and Acquisition (Army), Washington, DC.
Proceedings of the 1982 Army Science Conference Held at the United States Military Academy, West Point, New York on 15-18 June 1982. Volume II. Principal Authors H through N.
18 Jun 82, 465p
See also Volume 3, AD-A120 813.

These Proceedings of the 1982 Army Science Conference are a compilation of all papers presented at the conference and the supplemental papers that were submitted. The Proceedings consist of four volumes, with Volumes I through III unclassified, and Volume IV classified.

AD-A120 813/1 PC **A20/MF A01**
Deputy Chief of Staff for Research, Development and Acquisition (Army), Washington, DC.
Proceedings of the 1982 Army Science Conference Held at the United States Military Academy, West Point, New York on 15-18 June 1982. Volume III. Principal Authors P through Z.
18 Jun 82, 467p
See also Volume 1, AD-A120 811.

These Proceedings of the 1982 Army Science Conference are a compilation of all papers presented at the conference and the supplemental papers that were submitted. The Proceedings consist of four volumes, with Volumes I through III unclassified, and Volume IV classified.

AD-A120 820/6 PC **A09/MF A01**
Illinois Univ. at Urbana-Champaign. Coordinated Science Lab.
Annual Progress Report for July 1, 1981 through June 30, 1982,
R. T. Chien, and W. K. Jenkins. Aug 82, 182p
Contract N00014-79-C-0424

Contents: Physical Electronics--Molecular Beam Epitaxy; Semiconductor Materials and Devices; Quantum Electronics; Semiconductor Physics; Thin Film Physics; Microwave Acoustics; Surface Studies; Electromagnetic Communication, Radiation and Scattering; Plasma Physics; Rarefied Gas Dynamics and Computational Gas Dynamics; Computer and Information Systems--Computer Systems; Applied Computation Theory; Advanced Automation; Information Retrieval; Communications and Control Systems--Communications; Analog and Digital Circuits; Decision and Control; Digital Signal and Image Processing; Climate and Crop Studies.

N82-33981/3 PC **A02/MF A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
An Assessment of PERT as a Technique for Schedule Planning and Control.
C. W. Sibbers. Jul 82, 21p NAS 1.15:83265, NASA-TM-83265

The PERT technique including the types of reports which can be computer generated using the NASA/LaRC PPARS System is described. An assessment is made of the effectiveness of PERT on various types of efforts as well as for specific purposes, namely, schedule planning, schedule analysis, schedule control, monitoring contractor schedule performance, and management reporting. This assessment is based primarily on the author's knowledge of the usage of PERT by NASA/LaRC personnel since the early 1960's. Both strengths and weaknesses of the technique for various applications are discussed. It is intended to serve as a reference guide for personnel performing project planning and control functions and technical personnel whose responsibilities either include schedule planning and control or require a general knowledge of the subject.

PB83-115683 PC **A11/MF A01**
Tennessee General Assembly, Nashville. Office of Legal Services.
Scientific and Technical Informational Resources Available to the Tennessee General Assembly: Tennessee Legislative State Science, Engineering and Technology Program.
Final rept.,
Joseph Albert Barnes. May 82, 241p NSF/ISP-82020
Grant NSF-ISP78-15107

The role of the State of Tennessee in the State Science, Engineering, and Technology Program (SSET) is addressed. The report presents background information on the establishment of SSET; a historical perspective on the Tennessee legislature's role in public policy formation; a description of the growth of legislative staff services and information resources; information resources other than legislative staff; consequences of and responses to legislative reliance upon external information resources; and a discussion for improving Tennessee's legislative science and technology (S&T) capacity. Included in the report are a chronology of the creation of the Legislative Council; the structure of the Tennessee General Assembly; the study committee subject index from 1971 through 1981; a list of Tennessee State Legislators' occupations, reflecting the wide range of S&T expertise available; a directory of state agencies in Tennessee; a list of lobbyists and their areas of expertise, and a partial list of publications of the Council of State Governments.

PB83-115915 PC **A06/MF A01**
California Commission on Industrial Innovation, Sacramento.
State Activities to Encourage Technological Innovation: An Update.
Feb 82, 103p
Sponsored in part by the National Governors' Association, Washington, DC.

This catalogue of state programs and offices to encourage innovation and high-tech industry was compiled by the California Commission on Industrial Innovation for the National Governors' Association Task Force on Technological Innovation, chaired by Governor Edmund G. Brown, Jr. of California and William G. Milliken of Michigan. A survey of all 50 states was performed in January of 1982, and those programs included which fell in the categories of public/private forums for discussing innovation, resources efficiency, research and development, training of technical personnel, financing innovation, and giving workers a stake in innovation.

PB83-117846 PC **A07/MF A01**
Associated Research Analysis Corp., Fairfax, VA.
Evaluation of the Third Year of Operation of the Trade Adjustment Assistance Center Program.
Annual rept. (Final).
Jul 82, 145p
Grant ITA-99-26-07107-31

Under the Trade Act of 1974, the U.S. Department of Commerce is charged with providing assistance to firms injured by foreign imports. The assistance rendered includes technical and financial (direct and guaranteed loans) assistance. Eleven Trade Adjustment Assistance Centers (TAACs) have been established by Commerce to implement the program on a regional basis. This report provides the program evaluation findings for the period between October 1, 1980 and September 31, 1982. Additionally, the report covers program developments that occurred between October 1, 1981 and June 30, 1982. The report concludes that the TAACs are operating effectively and that the program has continued to improve.

PB83-118547 PC **A02/MF A01**
Rutgers - The State Univ., New Brunswick, NJ. Center for State Legislative Research and Service.
Oversight Development Project, 1982 Annual Report (June 1, 1981-May 31, 1982),
Alan Rosenthal, Carl Van Horn, and Susan Fuhrman. Jun 82, 15p NSF/ISP-82029
Grant NSF-ISP79-18629
Sponsored in part by Ford Foundation, New York.

This report on the Oversight Development Project reviews project activities during the second year of the effort. Six trips were made to project states to examine oversight utilization. Project staff interviewed 194 legislators, legislative staff, administrators, reporters, and interest group representatives. These interviews, which were tape recorded, will be compared with those conducted in the first year of the grant and conclusions will be drawn about factors that influence oversight report utilization. Workshops were conducted in Colorado, Minnesota, and Connecticut. Two seminars were held on developing and utilizing legislative oversight. A number of occasions were used to discuss legislative oversight and to disseminate preliminary findings. The plan for the third year is presented and a list of key contacts from the states that have participated in the project are provided.

PB83-119347 PC **A04/MF A01**
General Accounting Office, Washington, DC. General Government Div.
Stronger Supervision of Credit Unions Needed.
6 Oct 82, 51p GAO/GGD-83-12, B-202789.

The National Credit Union Administration (NCUA) insures both Federal credit unions and qualified State credit unions through the National Credit Union Share Insurance Fund. NCUA has full responsibility for supervising Federal credit unions but shares the responsibility with State regulatory authorities for federally insured State credit unions. Regarding the supervision of Federal credit unions, this report discusses the reluctance of NCUA examiners to take more stringent actions to convince credit union management to correct problems. In the area of State-chartered federally insured credit unions, NCUA lacks a comprehensive evaluation of the adequacy and acceptability of each State's examination program. GAO recommends steps to improve and strengthen supervisory actions taken against Federal credit unions. GAO also recommends that NCUA first determine the acceptability of various State examination programs and then continue to monitor their capabilities.

PB83-121939
(Order as PB83-121921, PC **E13/MF E13**)
Commission of the European Communities, Luxembourg.

Opening Address,
Raymond K. Appleyard. 1982, 4p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p306 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-121947
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
Presentation of the Aims of the Symposium,
J. Michel Gibb. 1982, 4p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p7-10 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-121954
(Order as PB83-121921, PC **E13**/MF **E13**)
Centre d'Etudes des Techniques Economiques Modernes, Paris (France).
Innovation, the Key to New Forms of Growth,
A. Piatier. 1982, 18p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p11-28 1982.

No abstract available.

PB83-121962
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
An Industrialist's View of Technology Transfer,
J. Franke. 1982, 11p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p29-41 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-121970
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
Why Technology Transfer in Europe Has Been a Failure,
S. Dollond. 1982, 2p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the Symposium held in Luxembourg on June 10-12, 1981, p42-43 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-121988
(Order as PB83-121921, PC **E13**/MF **E13**)
Lake Electronics Ltd., Dublin (Ireland).
The Requirements of Emerging Enterprises in a Changing Technological Environment,
H. Lynam. 1982, 10p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p44-53 1982.

No abstract available.

PB83-121996
(Order as PB83-121921, PC **E13**/MF **E13**)
Institut fuer Giessereitechnik, Duesseldorf (Germany, F.R.).
Overcoming the Barriers to Technology Transfer: The Experience of an Industrial Institute,
A. Dahlmann. 1982, 11p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p54-64 1982.

No abstract available.

PB83-122002
(Order as PB83-121921, PC **E13**/MF **E13**)
Shoe and Allied Trades Research Association, Kettering (England).
Technology Transfer Case Studies,
J. Bunten. 1982, 11p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p65-75 1982.

No abstract available.

PB83-122010
(Order as PB83-121921, PC **E13**/MF **E13**)
Garching Instrumente G.m.b.H., Munich (Germany, F.R.).
Exploitation of the Results of Basic Research,
B. Hertel. 1982, 5p
Including in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p76-80 1982.

No abstract available.

PB83-122036
(Order as PB83-121921, PC **E13**/MF **E13**)
Technologie-Vermittlungs-Agentur, Berlin (Germany, F.R.).
The Marketing Bottleneck in the Production of Information,
D. W. Haag. 1982, 4p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p84-87 1982.

No abstract available.

PB83-122051
(Order as PB83-121921, PC **E13**/MF **E13**)
VDI-Technologiezentrum, Berlin (Germany, F.R.).
Deployment of the Instruments of Technology Transfer: The Experience of the VDI-Technologiezentrum,
R. Stemme. 1982, 6p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p94-99 1982.

No abstract available.

PB83-122069
(Order as PB83-121921, PC **E13**/MF **E13**)
Technische Univ., Berlin (Germany, F.R.).
Scientific Information Transfer from the Viewpoint of Technical Universities (Experience, Problems and Prospects),
J. Allesch. 1982, 8p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p100-107 1982.

No abstract available.

PB83-122077
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
Summary of the Panel Discussion,
J. Lannoy. 1982, 3p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p108-111 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-122085
(Order as PB83-121921, PC **E13**/MF **E13**)
Institut pour l'Encouragement de la Recherche Scientifique dans l'Industrie et l'Agriculture, Brussels (Belgium).
Technological Guidance: The Belgian System,
W. Degrieck. 1982, 7p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p112-118 1982.

No abstract available.

PB83-122101
(Order as PB83-121921, PC **E13**/MF **E13**)
Rationalisierungs-Kuratorium der Deutschen Wirtschaft e.V., Eschborn (Germany, F.R.).
Innovation Consultancy and Technology Transfer in the SME Sector,
B. Wahl. 1982, 12p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p125-136 1982.

No abstract available.

PB83-122119
(Order as PB83-121921, PC **E13**/MF **E13**)
Agricultural Development and Advisory Service, London (England).
Technology Transfer in the Agriculture Industry and Its Similarity to Processes in Other Industries,
P. O'N. Hoey. 1982, 6p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p137-142 1982.

No abstract available.

PB83-122135
(Order as PB83-121921, PC **E13**/MF **E13**)
Control Data Worldtech International, Inc., Frankfurt am Main (Germany, F.R.).
Control Data Worldtech: An Example of Commercial Technology Transfer Programmes,
H. Onken. 1982, 9p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p148-156 1982.

No abstract available.

PB83-122192
(Order as PB83-121921, PC **E13**/MF **E13**)
Polytechnic of Central London (England).
Finding Outlets for Inventiveness,
M. Fox, M. L. Caglar, and A. B. Robertson. 1982, 11p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p190-200 1982.

No abstract available.

PB83-122200
(Order as PB83-121921, PC **E13**/MF **E13**)
Bochum Univ. (Germany, F.R.).
Technology Transfer - A Part of Regional Policy,
W. Bredemeier, and H. J. Vattes. 1982, 12p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p201-212 1982.

No abstract available.

PB83-122218
(Order as PB83-121921, PC **E13**/MF **E13**)
Institut National Polytechnique de Lorraine, Nancy (France).
Creating Mechanisms for Transfer Between Publicly-Sponsored Research and Industry,
M. Castagne, and J. L. Floriot. 1982, 11p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p213-223 1982.

No abstract available.

PB83-122226
(Order as PB83-121921, PC **E13**/MF **E13**)
Edinburgh Univ. (Scotland).

The Role of the University in the Commercialization of its Industrial Property,
J. W. Midgley. 1982, 6p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p224-229 1982.

No abstract available.

PB83-122234
(Order as PB83-121921, PC **E13**/MF **E13**)
Agence Nationale de Valorisation de la Recherche, Courbevoie (France).
A New Policy in Support of Innovation,
C. F. Bedouet. 1982, 3p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p230-232 1982.

No abstract available.

PB83-122242
(Order as PB83-121921, PC **E13**/MF **E13**)
Institute for Industrial Research and Standards, Dublin (Ireland).
Product and Process Development Role of an Industrial Technology Institute in a Developing Economy,
J. P. Brady. 1982, 10p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p233-242 1982.

No abstract available.

PB83-122259
(Order as PB83-121921, PC **E13**/MF **E13**)
International Federation of Patent Agents.
Requirements and Opportunities for Remedying Existing Shortcomings in Technology Transfer as Seen from the Viewpoint of Industry,
J. S. Fischinger. 1982, 8p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p243-250 1982.

No abstract available.

PB83-122267
(Order as PB83-121921, PC **E13**/MF **E13**)
Gesellschaft fuer Schwerionenforschung m.b.H., Darmstadt (Germany, F.R.).
Technology Transfer in Practice,
K. D. Suessbrich. 1982, 4p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p251-254 1982.

No abstract available.

PB83-122275
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
Summary of the Panel Discussion,
J. Lannoy. 1982, 3p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxenbourg on June 10-12, 1981, p255-259 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-122291
(Order as PB83-121921, PC **E13**/MF **E13**)
Deutsches Patentamt, Munich (Germany, F.R.).
Patent Information as a Means of Improving Technological Transfer,
Erich Hausser. 1982, 8p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p265-272 1982.

No abstract available.

PB83-122317
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
Creating a Climate for Innovation,
E. Oser. 1982, 9p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1091, p286-294 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-122325
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
Study and Development of the Communication and Transfer of Knowledge,
H. J. Perret. 1982, 5p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p295-299 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-122341
(Order as PB83-121921, PC **E13**/MF **E13**)
Portsmouth School of Architecture (England).
The Utilization of Technical Information in Design of Buildings - A Case Study for Energy Conservation,
James A. Powell, and Terry Nichols. 1982, 11p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the Symposium held in Luxembourg on June 10-12, 1981, p305-315 1982.

No abstract available.

PB83-122382
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
Summary of the Panel Discussion,
E. Phillips. 1982, 2p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p334-337 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-122390
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
Concluding Address,
J. Lannoy. 1982, 13p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p338-350 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-123000 PC **A04**/MF **A01**
Urban Systems Research and Engineering, Inc., Cambridge, MA.
Application of HUD's Data Processing Systems to the Monitoring of Section 8 Costs,
Andrew S. Griffiths. Nov 79, 58p HUD-0002296
Contract HUD-H-5001-T01

This report describes a review of HUD's current data processing systems as tools to monitor Section 8 costs. The review involved examination of sample data from the Computerized Underwriting Processing System (CUPS) and from the Low Income Assistance Program System (LIAPS), as well as from discussions with HUD staff familiar with the operation of these systems. The review of CUPS indicates that it is at present of little value in monitoring Section 8 costs. CUPS includes only Federal Housing Administration - insured projects, thereby excluding about half of the Section 8 projects. A sample of insured 221(d) (4) projects which were expected to be in CUPS indicated that about 60 percent of the projects did not have acceptable financial data. CUPS had virtually no controls over data quality and had limited reporting capabilities. Despite these limitations, it seems feasible to extend this system to serve the dual role of supporting local office operation and collecting development cost information. LIAPS was also deemed not adequate to support a required analysis of tenant characteristics of Section 8 projects. Few controls over the quality or completeness of the data base were observed. Because there is a need for a cost monitoring system, the report recommends that a feasibility study be conducted regarding the extension of CUPS and / or its parallel system, the Office of Loan Management System, coverage to all Section 8 projects. A study of the extent and reasons for missing LIAPS data should be conducted, and a long - term system development plan should be prepared. Tables and a few footnotes are included. Appendices present a memorandum and LIAPS data analysis. (Author abstract modified).

PB83-123117 PC **A02**/MF **A01**
Kansas Univ., Lawrence.
Strategic Planning: A Bibliography,
Charles H. Levine. 15 Aug 81, 4p HUD-0002311
Grant HUD-H-2829RG

This bibliography on strategic planning includes 22 reference works, most published between 1978 - 80. Conference papers, journal articles, and other materials are included. Topics covered include the uses of strategic planning, advanced techniques for strategic planning, and strategic planning in business and government.

PB83-123174 PC **A03**/MF **A01**
RAND Corp., Santa Monica, CA.
Audit of the Housing Allowance Office (HAO) Analysis Files, Site I, Year 5. Housing Allowance Supply Experiment,
Ann W. Wang. Nov 81, 27p RAND/N-1423-HUD, HUD-0002317
Contract HUD-H-1789

This report presents the findings of an audit of administrative data collected by the Housing Allowance Office (HAO) in Brown County, Wisc., from June 1974 through June 1979, the first 5 years of a 10 - year experimental housing allowance program there. The purpose of the audit is to assess and improve the quality of HAO administrative data at each stage -- from transcribed forms to cleaned analysis files. From the five raw data files sent by HAO for examination, variables were selected for analysis and subjected to three types of computerized checks to detect errors in value ranges, internal consistency, and cross - record consistency. Few genuine errors were revealed, and all were corrected or changed to an audit code indicating the absence of usable data. The five data files were then combined to create three analysis files: client characteristics file (CCF), housing characteristics file (HCF), and recertification characteristics file (RCF). Because each analysis file is composed of information from more than one data file, it was necessary to match client records by a common identifier to ensure that all parts of a combined record pertained to the same client or transaction. The study found negligible mismatches in the CCF and none in the RCF. Also produced was a set of 26 derived variables for the analysis files. Consistency checks revealed some anomalies in the CCF - derived variables pertaining to client transaction histories, which were corrected. Finally, the marginals (response frequencies) of each variable -- original and derived -- were manually examined to see that the responses fell within specified limits. The errors uncovered affected only 24 of the more than 800 variables examined in the 3 files. Overall, the results of the data checks confirmed that the HAO data were complete and accurate. Tabular data and footnotes are included. Supplementary tables are appended. (Author abstract modified).

PB83-123240 PC **A05**/MF **A01**
Gordon Associates, Inc., Washington, DC.

Assessment of HUD Residential Wage Determination Data Collection Efforts.
12 Feb 79, 91p HUD-0002325
Contract HUD-H-2692

The major purpose of this study is to establish a sound basis of decisions on HUD responsibility for the Davis - Bacon residential wage survey function. The study addresses the question of whether HUD should maintain its present residential wage data collection activities or modify them to yield higher benefits for its efforts. The study also seeks to determine the level of Department of Labor (DOL) use of HUD data, determine HUD tasks required to coordinate data collection efforts with the proposed DOL automated Davis - Bacon Information System (DBIS), and evaluate the costs and benefits of HUD alternatives for residential wage data collection. The field survey, which covered HUD and DOL practices regarding Davis - Bacon wage determinations in 8 of the 10 HUD regions, revealed that HUD estimates of the dollar value of construction projects covered by the Davis - Bacon Act differ widely and that no accurate records exist, that HUD is paying construction wage rates in excess of actual prevailing wage rates in many geographic areas, and that HUD wage data collection efforts are decentralized and performed in area and insuring offices. Moreover, the study found that, in certain areas, these surveys were not conducted and union commercial rates exist by default. DOL's DBIS cannot now, and will not in the foreseeable future, be of assistance to HUD. The report offers several recommendations based on the survey findings. HUD needs to develop clearer lines of authority and direction for the residential wage data collection effort, and the HUD national office should assume responsibility for direction of data collection efforts and coordination with DOL's national office. The HUD Office of Labor Relations should be the focal point. Closer coordination between HUD and DOL should be established. Finally, further research is needed to develop data currently unavailable and perform the cost / benefit analysis requested by HUD. Tables, figures, and exhibits are supplied. Related material and regulations are appended. (Author abstract modified).

PB83-123463 PC **A03/MF A01**
Harvard-MIT Joint Center for Urban Studies, Cambridge, MA.
Location Decisions of Large, Multiplant Companies: A Summary of Findings.
Roger W. Schmenner. 1981, 49p HUD-0002353
Grant HUD-H-2981RG

This 2 - year study addresses the factory location decisionmaking of most of the Fortune 500 corporations. It builds on interviews with 60 companies, a plant census of 410 companies which represent 37 percent of the manufacturing employment in the United States, and over 500 detailed surveys of particular plants' operations. The study views the location decision broadly, noting that before locating any new capacity, the corporation must recognize the extent and character of capacity shortfalls and then must choose between expansion at already existing plants, establishment of new plants, and relocation of existing ones. If a new plant or relocation is advocated, a search for a suitable location can average about 6 months. Six considerations are most prevalent in deciding on an actual location: labor costs, labor unionization, proximity to markets, proximity to supplies / natural resources, proximity to other company plants, and quality of life. The importance of these factors is often dictated by the nature of competition in the company's industry. These controlling considerations frequently act to define the region or State of search, and sometimes even a metropolitan area. Government policies are viewed as tie - breaking influences for two or more otherwise equivalent sites. Study results support a number of public policies: the significance of State right - to - work laws, the insignificance of tax incentive programs and most other financial inducements, the relatively greater importance of public policies affecting the physical considerations which help construct and start up plants (labor / training; road, sewer, sewage treatment construction; environmental and zoning permits), and the advisability of "one - stop shopping" for corporate questions and help at both the State and local levels. Also examined is the geographic shift of industry regionally and among central cities, suburbs, and nonmetropolitan areas. Tables are included. (Author abstract modified).

PB83-123810 PC **A17/MF A01**
Institute for Community Design Analysis, Inc., New York.
Review and Analysis of the Chicago Housing Authority and Implementation of Recommended Changes. Final Report of Phase 1: Recommended Changes and Resulting Savings.
31 Mar 82, 390p HUD-0002417
Contract HUD-H-5524

This review of the Chicago Housing Authority (CHA) is the latest in a series of studies since 1978 which have attempted to identify the various factors contributing to CHA's fiscal problems and operational difficulties and to develop a proposal for remedying the situation. CHA now has an annual shortfall of over $38 million. This study has two phases: a review and recommendation phase which was to run for 4 months starting November 1, 1981, and which concludes with this report; and an implementation and monitoring phase which was to run for 2 years following the report. The report is subdivided into three sections: management, maintenance, and finance. The report concludes that the CHA is being run as a firefighting operation: one crisis after another preoccupies its staff on a continuing basis and, unconsciously, determines overall policy. CHA lacks a clear organizational structure at the executive level; too few management and administrative personnel know about current real estate management practices and procedures; and CHA's Central Office fails to direct, designate authority, or supervise project managers. Only 4 or 5 of CHA's 19 project managers were evaluated as competent or knowledgeable enough to be managing projects. CHA's patronage system contributes to the lack of competence and experience of CHA's staff at all levels. Most of the large, family high - rise developments were found to be in various states of serious disrepair and to have high turnover and vacancy rates. Three areas of CHA maintenance have assumed crisis proportions: energy consumption, elevator maintenance, and waste disposal. Major findings of a comprehensive audit performed in 1981 were confirmed: most of CHA's activities are simple unaccountable. Recommendations to improve CHA's operations are given. Charts and an appended volume of data and documents are included. (Author abstract modified).

PB83-123968 PC **A03/MF A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development.
Integration of Public Housing With a Housing Voucher Program: An Overview.
Joseph P. Riley. 09 Dec 81, 32p HUD-0002438

This paper presents major issues related to applying the housing voucher concept to the public housing program, with emphasis on the underlying comparative cost considerations. Two major issues underlie much of the discussion about public housing and housing vouchers: (1) the question of the economic feasibility of the public housing program vis - a - vis other options and (2) the growing need for (and problems with distribution of) public housing operating subsidies. Section 8 Existing Program costs were used as indicators of the cost of a housing voucher, although higher or lower standards could also be defended. The analysis results indicate that if rent rate differences are ignored, the public housing program will cost about 97 percent of what the Section 8 Existing Program would have cost in 1979. Correspondingly detailed data were not available for 1981, but partial data show that per unit outlays to serve the same households as now in public housing would have been almost identical. In 1979, the public housing program cost about 86 percent of what it would have cost to serve the same households at their public housing rents in the Section 8 Existing Program. Per unit costs vary much more from public housing agency (PHA) to PHA and from project to project within PHA's than among Section 8 Existing units. While the normal private market response to inefficient rental units is improvement, abandonment, removal or sale, public housing authorities generally have none of these options. Use of unit - based housing vouchers would, at best, mean an improved performance funding system - type of subsidy approach; at worst, they would be far more costly and / or lead to a deterioration of the public housing inventory. However, selective use of tenant - based housing vouchers to replace excessively costly public housing could decrease program costs and free projects for alternate re - uses. Charts, tables, and notes are included. (Author abstract modified).

PB83-124255 PC **A20/MF A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Alternative Operating Subsidy Systems for the Public Housing Program.
May 82, 461p HUD/PDR-698, HUD-0002478

This report, focusing on long - range alternatives for the subsidy funding system, presents four major alternatives and examines many variations of specific features of funding systems, but does not reach any conclusion as to which system is preferable. The key issue is how radical a change in the public housing program is desired as an outcome of the Performance Funding System, that was designed to control the growth of subsidies and limit payments for inefficient operations. This analysis assumes that the continued operation of extremely inefficient projects should be discouraged. A fundamental choice exists between funding systems based on past and current cost patterns within the public housing program and funding systems that relate the acceptable costs of public housing to external standards such as private market rents. Four composite systems that represent basic alternatives are a cost - based system with discretionary reductions in allowable expense levels, a cost - based system with a new range test, a fair market rent system, and housing vouchers for public housing tenants. Tables, chapter references, and notes are provided. (Author abstract modified).

PB83-124610 PC **A03/MF A01**
General Accounting Office, Washington, DC. General Government Div.
IRS Can Do More to Identify Tax Return Processing Problems and Reduce Processing Costs.
14 Oct 82, 39p GAO/GGD-83-8, B-202441

This report discusses how the Internal Revenue Service corrects errors that are made by taxpayers when they prepare their individual income tax returns and by Service employees when they process the returns. GAO made this review to determine how well the Service processes individual income tax returns and if improvements could be made in the tax return processing system. The report points out that the Service does an effective job of correcting tax return errors. It also shows that processing costs could be reduced if better program evaluation data is collected and if several changes are made to the Service's return processing operations.

PB83-125419 PC **A03/MF A01**
National League of Cities, Washington, DC.
Computer Technology and Local Government: An Assessment of Problems.
Final rept.
Mar 79, 26p NSF/RA-790779
Grant NSF-78-SP-1051

Results are presented of a conference held to evaluate the usefulness of data processing to local government. Participants identified more than 50 specific problems reflecting several areas of primary importance to policy and management officials. More than half of the problems identified were directly or indirectly related to the lack of information on which policy officials could base decisions concerning municipal data processing. The remainder of the problems related to the management of the data processing function and the integration of information processing technology into municipal operations. The need for elected officials and technical personnel to be able to evaluate vendor claims and to determine how well suited a product is for a specific activity was emphasized. Training for local officials was deemed to be an integral part of upgrading the decision-making skills necessary to respond to information processing problems. A list of conference participants is included.

PB83-125757 PC **A18/MF A01**
National Bureau of Standards, Washington, DC. Inst. for Computer Sciences and Technology.
Proceedings of the Computer Performance Evaluation Users Group 18th Meeting - CPEUG 82 - 'Improving Organizational Productivity'.
Final rept.,
Carol B. Wilson. Oct 82, 420p NBS-SP-500-95
See also report dated Oct 80, PB81-106486. Library of Congress catalog card no. 82-600622.

These Proceedings record the papers that were presented at the Eighteenth Meeting of the Computer Performance Evaluation Users Group (CPEUG 82) held October 25-28, 1982, in Washington, DC. With the theme, Improving Organizational Productivity, CPEUG 82 reflects the critical role of information services in

the productivity and survival of today's organization. To meet this challenge, the scope of CPE must be expanded to address performance issues in all aspects of information systems (hardware, software, facilities, communications, personnel, policies, and procedures) throughout the system life cycle. The program was divided into three parallel sessions and included technical papers on previously unpublished works, case studies, tutorials, and panels. Technical papers are presented in the Proceedings in their entirety.

PB83-125799 PC **A04**/MF **A01**
Georgia Inter-Univ. Task Force.
Development of a Set of Simplified Financial Management Procedures for Small Cities and Counties in Georgia. Product Number 2: Handbook of Specific Ways to Increase Revenues and Decrease Expenditures.
Charles K. Coe. May 79, 53p NSF/RA-790776
Grants NSF-ISP79-08955, NSF-ISP76-24655
Prepared by Georgia Univ., Athens.

A set of financial management techniques is presented to increase revenues and reduce expenditures. These techniques are designed to be used by governments of all sizes, including counties and cities. Techniques presented for increasing revenues include: obtaining all funds legally possible; increasing idle fund investment; collecting delinquent property taxes; collecting delinquent fines and forfeitures; invoicing in an untimely manner; and processing warrants and other court documents. Techniques discussed for reducing expenditures include: analyzing worker's compensation payments; obtaining purchasing discounts for buying like items in bulk; controlling inventories of movable property; deciding whether to repair or replace equipment; determining the best frequency of billing cycles; and evaluating equipment downtime.

PB83-125856 PC **A04**/MF **A01**
Georgia Inter-Univ. Task Force.
A Guide to Selecting Administrative Arrangements for Small Local Governments.
May 79, 63p NSF/RA-790778
Grants NSF-ISP79-08955, NSF-ISP76-24655
Prepared by Georgia State Univ., Atlanta.

The need for assessing local government administrations is identified and the roles and responsibilities of government administrators are discussed. Several options that might be used by small cities and counties in the administration of their governments are examined. Two checklists are presented. The first is designed to inventory administrative practices currently being employed by a city or county and to assess the importance of these practices. The score derived from this checklist indicates the degree of need for administrative change. The second checklist is based upon a large body of literature which focuses on the characteristics of communities that influence their receptivity to administrative change. The score derived from using this checklist indicates the relative feasibility of adopting an administrative change and the probability of such a change resulting in a stable administrative arrangement. Potential sources of assistance in using the assessment procedures are suggested.

PB83-125864 PC **A05**/MF **A01**
National Science Foundation, Washington, DC. Div. of Industrial Science and Technological Innovation.
Small Business Innovation Research Program: Abstracts of Phase I Grants.
Sep 81, 81p NSF/ISI-82007

Abstracts of 86 research grants are provided. The awards were made to small science-and technology-based firms for advanced research in the following areas of potential application: materials; bio-sources of materials; genetics; advanced manufacturing processes; advanced chemical processes; industrial biological processes; microelectronics; communications and systems; computer science and engineering; robotics and controls; scientific and industrial measurements; radiation processing and control; light machinery and components; advanced automotive research; food process engineering; marine resources; mineral resources; environmental technology; tunneling; earthquake engineering; science and technology to aid the handicapped; and appropriate technology. Potential commercial applications are suggested for each of the technologies.

PB83-125898 PC **A02**/MF **A01**
Rhode Island League of Cities and Towns, Providence.
The New England Innovation Group, Profile of Origin, Objectives and Accomplishments.
May 82, 22p NSF/ISP-82030
Grant NSF-ISP80-24008

The New England Innovation Group (NEIG) is a six-state intergovernmental science and public technology program. Its organizational structure seeks to insure that technology and innovation will continue to be offered to local governments throughout the United States when unforeseen factors, such as reduced financial support from the Federal government and unfavorable economic conditions weaken interest in innovation. NEIG has focused its technology utilization activities in these areas of need: (1) energy management; (2) economic/community development; (3) communication and information exchange/networking; and (4) policy management assistance. Project accomplishments are reported in magazine and news articles, media presentations, lectures, and congressional testimony. Examples of NEIG's technology utilization projects include: NEIG/Rhode Island Foundation Energy Management Demonstration Program; an economic development program to assist the jewelry industry; and energy management of municipal lighting.

PB83-125930 PC **A02**/MF **A01**
General Accounting Office, Washington, DC. Program Analysis Div.
Progress in Improving Program and Budget Information for Congressional Use.
Report to the Congress.
1 Sep 82, 25p GAO/PAD-82-47, B-200111
See also PB-299 441.

The Comptroller General is required, by law, to develop standard terms and classifications for Federal fiscal, budgetary, and program-related information; to identify congressional needs for such information; and to monitor recurring reporting requirements of the Congress and recommend changes. This annual report, required by Title VIII of the Congressional Budget Act of 1974, summarizes GAO's work in these areas over the past year and it summarizes GAO's views on new directions in Federal financial management.

PB83-125948 PC **A04**/MF **A01**
General Accounting Office, Washington, DC. Resources Community Economic Div.
Evaluation of Administrative Procedures at the Synthetic Fuels Corporation.
18 Oct 82, 66p GAO/RCED-83-27, B-201400

The Synthetic Fuels Corporation has improved its administrative procedures, but further actions are needed to strengthen contracting practices and internal financial controls. Pertinent recommendations are made in this report. This report also discusses the evolution of the Corporation's current salary structure and the activities of the Office of the Inspector General.

PB83-125997 PC **A12**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
Development of a Set of Simplified Financial Management Procedures for Small Cities and Counties in Georgia. Product Number 1: Financial Management Procedures Manual.
Charles K. Coe, and John Engstrom. May 79, 259p NSF/RA-790773
Grants NSF-ISP79-08955, NSF-ISP76-24655
Georgia State Department of Community Affairs, Atlanta.

A set of model, local government financial management procedures, accounts, records, and reports are presented. This step-by-step manual assumes a non-automated system and is especially designed for a hypothetical city of 1500, although larger and smaller governments can adapt these procedures for their use. Also assumed is a 'one-write' approach in which a person simultaneously records a source document or journal and ledger, thus saving the time of posting the same transaction many times. Attention is paid to double-entry bookkeeping, governmental accounting, budget preparation, property tax procedures, personnel and payroll procedures, debt administration, fixed asset management and records procedures, purchasing and cash disbursements, and the annual financial report. Illustrative transactions and financial statements for a hypothetical small city are presented.

PB83-129460 PC **A20**/MF **A01**
Auburn Univ. at Montgomery, AL. Center for Government and Public Affairs.
Alabama Innovation Group, Matching Public Sector Needs with University Resources.
Charles M. Stone. 1980, 458p NSF/RA-800657
Grant NSF-ISP79-02634

This report provides to public officials in Alabama technologies which are the results of research and development projects conducted by a participating network of innovation groups, the Federal Laboratory Consortium, private industry, local and state governments, and universities. Also described are: problems which required resolutions; innovations that provided the solutions; savings that were realized from incorporating the innovations; and contact persons for additional information. Mechanisms for network and organizational support such as the National Innovation Network and other source organizations involved in technology transfer are identified. Abstracts of projects completed by Public Research and Development for Governments in Alabama are included.

PB83-854646 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Management By Results: Corporate Techniques. 1974-November, 1982 (Citations from the Management Contents Data Base).
Rept. for 1974-Nov 82.
Nov 82, 51p
Supersedes PB81-880494.

This bibliography contains citations concerning management by results. Topics include finance in strategic planning, management by inference, concepts of professional management, and budgeting by level of activity. (This updated bibliography contains 60 citations, 10 of which are new entries to the previous edition.)

PB83-854661 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Critical Path Method. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 86p
Supersedes PB81-850539.

This bibliography contains citations concerning critical path methods and computerized simulation for network planning of projects, dynamic programming algorithms for decision CPM networks, development planning techniques, and CPM-cost control as a managerial tool. Cost-time models and economic analysis of large scale projects are also included. (This updated bibliography contains 93 citations, 10 of which are new entries to the previous edition.)

PB83-854679 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Project Management. 1974-November, 1982 (Citations from the Management Contents Data Base).
Rept. for 1974-Nov 82.
Nov 82, 215p
Supersedes PB82-856345.

This bibliography cites articles discussing industrial and commercial project management. Cost overruns, project appraisal, cost improvement programs, rate of inflation evaluation, project communications, and computerized controls are included. (This updated bibliography contains 308 citations, 62 of which are new entries to the previous edition.)

5B. Documentation and Information Technology

AD-A120 000/5 PC **A99**/MF **A01**
Defense Technical Information Center, Alexandria, VA.
Source Hierarchy List. Volume I. A through H. Directorate of Data Base Services.
James J. McCadden. Jun 82, 725p DTIC/TR-82/3-VOL-1
See also Volume 2, AD-A120 001.

This is the first of two volumes of an alphabetical listing of corporate authors as used for announcement of reports received in the Defense Technical Information

Center (DTIC). Former names of organizations are included and displayed below the current source name used by DTIC. Cross-references direct the user from sub-element organizations to the major source level entry where they are also displayed.

AD-A120 001/3 PC **A99**/MF **A01**
Defense Technical Information Center, Alexandria, VA.
Source Hierarchy List. Volume II. I through Z. Directorate of Data Base Services,
James J. McCadden. Jun 82, 741p DTIC/TR-82/3-VOL-2
See also Volume 1, AD-A120 000.

The List consists of an alphabetical arrangement of hierarchical linkages established for computer retrieval of data cataloged under source names used by the Defense Technical Information Center. Hierarchical relationships are coded to a maximum of six levels within each set of source names. Former names of organizations are included in this list and displayed below the current source name used by DTIC.

AD-A120 500/4 PC **A03**/MF **A01**
Office of Naval Research, London (England).
European Scientific Notes. Volume 36, Number 7,
Donald R. Barr, and Don J. Peters. 31 Jul 82, 36p
Rept no. ESN-36-7
See also Volume 36, Number 6, AD-A117 766.

This is a monthly publication presenting brief articles concerning recent developments in European Scientific Research. It is hoped that these articles (which do not constitute part of the Scientific Literature) may prove of value to American scientists by calling attention to current developments and to institutions and individuals engaged in these scientific efforts. The articles are written primarily by members of the staff of ONRL and occasionally articles are prepared by, or in cooperation with members of the scientific staffs of the United States Air Force European Office of Aerospace Research and Development and the United States Army Research and Standardization Group. Articles are also contributed by visiting Stateside scientists.

AD-A120 767/9 Not available NTIS
Department of Defense, Washington, DC.
Catalog of FY 1981-FY 1982 DIOR Reports.
Apr 82, 26p
Availability: Department of Defense, Washington Headquarters Services, Directorate for Information, Operations and Reports, Washington, DC 20301.

This catalog has been prepared to serve as an informative, time-saving reference to Department of Defense (DOD) publications, statistical information, and other information services that are available from the Washington Headquarters Services/Directorate for Information Operations and Reports (WHS/DIOR). WHS/DIOR collects, analyzes, publishes, and otherwise disseminates a variety of statistical information in the areas of manpower, procurement, financial management, supply management, property management, and other selected areas. This information is collected for and distributed primarily to DOD management, members of Congress, and other Government officials, but is made available as a public service by the Department of Defense. For the most part, the publications described here contain data for Fiscal Year(FY) 1981 (October 1980 through September 1981), although historical data are also available. The information provided on each publication includes the publication number, title, frequency, number of pages(except for the computer products), a brief description of the report's contents, and the price for a single copy. Information has been organized according to the major areas in which the Directorate collects data - financial management, logistics, manpower, and procurement. In addition, information has been provided on certain special editions and services that are available.

DE82007895 PC **A09**/MF **A01**
Department of Energy, Washington, DC. Assistant General Counsel for Patents.
Patent Systems of the Federal Republic of Germany and Japan. Personel Interviews with Patent Practitioners.
Apr 82, 200p DOE/GC-0005
Portions of document are illegible.

The results of personal interviews held with patent practitioners in the Federal Republic of Germany and Japan are presented. Interviews were held in Germany and Japan with individuals in the corporate, private and governmental sectors knowledgeable in the area of patent law to assist representatives of the United States government in an understanding of the German and Japanese patent systems. This report is designed for those readers with only a basic understanding of German and Japanese patent practice and constitutes only a small part of an overall patent study and reform effort being carried out by the United States government. This report is not intended to be an authoritative study of the German and Japanese patent systems. (ERA citation 07:045476)

ED-202 482 Not available NTIS
International Studies Association, Syracuse, NY.
World Education in American Schools: A Handbook for School Librarians and Teachers,
O. Slouka, and Z. J. Slouka. Dec 80, 70P
Sponsored in part by Department of Education, Washington, DC. Div. of International Education.
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210. Also available from International Education Services Co., 3452 Lord Byron Drive, Bethlehem, PA 18017.

Intended to aid school librarians and media specialists who serve elementary and secondary school students, this guide explains the role of the school library in fostering student awareness of the universalism of human life and the understanding of international phenomena. Chapters focus on the nature of global education, its international dimensions, librarians' roles in the educational process, library-centered approaches, library-produced teaching materials, and library involvement in international education. Selected readings in international education and relevant instructional materials are listed, and an annotated address list of organizations and agencies which supply relevant materials is provided.

ED-202 484 Not available NTIS
Ohio Coll. Library Center, Columbus.
Research Report on Field, Subfield, and Indicator Statistics in OCLC Bibliographic Records,
Thomas B. Hickey. 23 Mar 81, 137p OCLC/OPR/RR-81/1
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

The statistics that are presented are based on a one percent systematic sample of the OCLC online union catalog as of January 1980. Detailed data were collected on the use of fields, subfields, indicators in bibliographic records, and on the co-occurrence of fields within bibliographic records. The sample used for the study was obtained by extracting all records with an OCLC control number ending in 44. For each category of this report, the statistics are grouped by format: monographs, serials, audiovisuals, sound recordings, music scores, maps, manuscripts, and cumulative bibliographic files. These statistics should be useful for estimating file growth, selecting subsets of records for local catalogs, and for designing bibliographic record data bases.

ED-202 485 Not available NTIS
California State Library, Sacramento.
Evaluation of the California Minority Information Services Network.
Final rept.,
Colin K. Mick. 2 Feb 81, 87p
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

This evaluation of a program started in 1979 to provide information and referral services (I&R) through public libraries to minority groups offers recommendations to improve these services to underserved segments of the California population. Introductory materials provide a summary analysis and a history of the Minority Information Services Network, as well as a detailed discussion of the nature and extent of information and referral serives. An inventory of existing I&R services in the state presents summaries of federal, state, and local programs based on library I&R programs. Analyses of three library-based programs in Auburn, Fresno, and Los Angeles County provide insights into meeting local objectives and their appropriateness to the overall state program. These evaluations are extended into network impicatons for future directions of the I&R program statewide. The report concludes with 19 findings and 13 specific recommendations for service and network improvement. Fourteen references are listed.

ED-202 486 Not available NTIS
Analysis of Reference Statistics Reported in 1977 Library General Information Survey,
Neal K. Kaske, and Rao Aluri. Jun 80, 31p
Paper presented to the Library Research Round Table Annual Conference of the American Library Association, New York, NY, June 29, 1980.
Available form ERIC Document Reproduction Service (Computer Microfilm Internationa Corporation), Arlington, VA 22210.

Analysis of data collected from 3,000 academic libraries by the 1977 Library General Information Surveys reveals that library operating budgets, institutional enrollment, and library circulation are the best prodictors of reference and directional transactions. Fifty-five percent of the transactions at reference service points are directional, while the remainder are reference transactions; university libraries report significantly higher numbers of transactions than either 4-year or 2-year colleges; and publicly controlled colleges report greater numbers than private institutions. Similarly, reference and directional transactions vary with total operating budge, collection and stuff size, and enrollment. The picture is complicated, however, by intervariable relationships; e.g. university libraries tend to have larger operating budgets, staff, and collections. Under these conditions, regression analysis is a better procedure to predict the number of reference and directional transactions.

ED-202 487 Not available NTIS
Wisconsin State Dept. of Public Instruction, Madison. Div. of Library Service.
Comprehensive Long-Range Program for Library Services in Wisconsin, 1980-1985.
1980, 66p
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

Devoted to long range planning for library services, this issue of the Wisconsin Library Bulletin reviews population profiles, economic indicators, social and governmental concerns, trends in education, and current surveys and needs assessments to formulate planning for Wisconsin Library Services over the next five years. Goals and objectives are developed for multitype library cooperatives, networks, and resource sharing; library services for general users, including the concerns for children, young adults, and college students; and library services for such specialized users as the disadvantaged, the institutionalized, and scholars. Special emphasis is given to the use of computer and communications technology and to the physical development of public libraries, systems, and facilities. Appendices deal separately with the scope, procedures, criteria, and priorities of the Library Services and Construction Act.

ED-202 488 Not available NTIS
New Jersey State County and Municipal Government Study Commission, Trenton.
The Development of Libraries and Networks: Prospective Roles and Responsibilities for Libraries in New Jersey. Nineteeth Report.
Jun 80, 108p
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

This report of an investigation of the legal, fiscal, and structural issues confronting New Jersey's public libraries contains 30 recommendations that address the various problems and needs revealed by the study. Chapters discuss the challenges facing libraries in New Jersey, the funding of local libraries, the delivery of local library services, investing in library services, networking among libraries, and achieving equal access to quality library services. An appendix presents highlights of a public hearing before the commission held in January 1980.

ED-202 489 Not available NTIS
Information Transform Industries, Costa Mesa, CA.
The Effective Use of Automation in Wisconsin Libraries, 1981-1985,
Hank Epstein, and Susan Baerg Epstein. Oct 80, 136p ESDPI-BULL-1204
Available from ERIC Document Reporduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

Intended to provide recommendations which will permit Wisconsin libraries to make more effective use of current automated systems, and provide a basis for statewide library automation planning, this report describes the current and future use of automation technology in that state's libraries. Its four major sections discuss the following: (1) highlights of the report and the report audience; (2) the existing automation environment in Wisconsin, online catalogs, and a statewide database; (3) current major commercial and not-for-profit automated services and planned extensions to these services, including circulation systems, cataloging systems, acquisition systems, serials systems, and search services; and (4) a 5-year plan defining the specific actions, projects, committees, and task teams needed to carry out the report recommendations.

ED-202 491 Not available NTIS
INFORMEDIA, Pearl River, NY.
Educational Film Index,
Mary Robinson Sive. 1979, 42p
Prepared for the Educational Film Library Association.
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

This index of approximately 300 short educational films released in 1978 follows the rules of the Preserved Context Index System (PRECIS). The system is structured so that each entry supplies a mini-abstract of the item being indexed, the age level of the intended audience, and the title of the film. This index is said to be one of the first applications of the PRECIS system in the United States.

ED-203 847 Not available NTIS
The New Copyright Law: Its Impact on Bio-Medical Communication,
Mark Johnson. 1978, 9p
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

Under previous copyright legislation and jurisprudence, medical, and to a lesser extent, educational professionals, were afforded broad discretion under the judicially created fair use doctrine. The Copyright Act of 1976 creates a statutory definition of fair use and prescribes a test to be used in determining when a use is 'fair' and when it is infringement. Central to this test is 'impact of potential market value' of the material. Biomedical communication involves material with a very high unit cost which is not offset by anything approaching mass distribution. There is no special exemption for, or understanding of, biomedical communication in the new law, with the result that the potential for a restrictive impact is great. Five references are cited.

ED-203 848 Not available NTIS
The Public Access File: A Content Analysis Approach,
Mark Johnson. Apr 80 27p
Paper presented at the Annual Convention of the National Association of Broadcasters, April 1980.
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

This paper presents the results of a study done on all public access files, which consist of all the letters written to each of the six television stations and 21 radio stations in the Houston, Texas, market area. A content analysis approach using 19 categories of information was employed. The results are supported by six tables presenting overall results, stations/formats, programs named/content types, comment class/TV stations, comment class controlled by content, and positive/negative. The results indicate that the majority of all letters were positive. Organized letter writing campaigns in evidence were positive in nature, complaints about sex and violence were few, and apparently the greatest concern to viewers is the cancellation, rescheduling, or pre-emption of popular programs. Fifteen references are listed.

ED-203 850 Not available NTIS
Northern Illinois Univ., De Kalb. Libraries.
A Guide for finding Biographical Sources.
Samuel T. Huang. Apr 81, 31p
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

Intended to assist library users in finding biographical sources in various disciplines, this compilation lists selective biographical sources which are available in the Northern Illinois University Libraries. The compilation is divided into four major areas: indexes to biographies, sources of information on living persons, sources of information on deceased persons, and biographical sources in special fields of interest. This last section covers the following subject fields: fine arts, performing arts, business and commerce, literature, authors, fictional characters, philosophy, religion, politics, government, law, physical sciences, behavioral sciences, social sciences, recreation, and sports. Entries in each section are arranged alphabetically by title. A step-by-step method to instruct library users in locating biographical sources is included.

ED-203 877 Not available NTIS
National Commission on Libraries and Information Science, Washington, DC.
Inventory of Library Needs, 1975: Illinois. A Supplement to the National Inventory of Library Needs, 1975,
Boyd Ladd. Oct 79, 76p
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

This report presents statistics concerning the resource needs of public libraries, public school library/media centers, and academic libraries in the state of Illinois. The specific resources analyzed are professional and support staff; collections and acquisitions of print and nonprint materials; space; hours of service; and operating expenditures. Data are derived from regular reports by the public libraries to the State Library, from reports by a sample of public schools to the National Center for Education Statistics (NCES) 1973 school library/media center survey, and from reports by institutions of higher education to the NCES 1975 survey of college and university libraries. Each category of resource need is summarized across the three library types, the library situation in Illinois in 1975 is summarized, and key findings are highlighted. Tables display the data.

ED-203 878 Not available NTIS
National Commission on Libraries and Information Science, Washington, DC.
Inventory of Library Needs, 1975: North Carolina. A Supplement to the National Inventory of Library Needs, 1975,
Boyd Ladd. Jul 78, 89p
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

Using statistics that identify the resource needs of public libraries, public school library/media centers, and academic libraries in the state of North Carolina, this report examines such factors as professional and support staff; collections and acquisitions of print and nonprint materials; space; hours of service; and operating expenditures. Data are derived from 1975 survey of public, school, and academic libraries conducted by the National Center for Education Statistics (NCES). Each category of resource need is summarized across the three library types, the library situation in North Carolina in 1975 is summarized, and key findings are highlighted. Tables display the data.

ED-203 879 Not available NTIS
National Commission on Libraries and Information Science, Washington, DC.
Inventory of Library Needs, 1975: Washinton, A Supplement to the National Inventory of Library Needs, 1975,
Boyd Ladd. Apr 79, 62p
Available from ERIC Document Reporduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

This report presents statistics concerning the library needs in the state of Washington as of 1975. The resources of public and academic libraries are examined in the following areas: professional and support staff: collections of print and nonprint materials: acquisition of materials; hours of service; and operating expenditures. Data are derived from regular reports of public libraries and from the 1975 survey of academic libraries conducted by the National Center for Education Statistics (NCES). The report highlights key findings, analyzes the data, shows limited and approximate indicators for school library/media centers, and describes the research methodology. Tables display the data.

N82-34300/5 PC **A05/MF A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Survey of Reader Preferences Concerning the Format of NASA Technical Reports.
T. E. Pinelli, M. Glassman, and V. M. Cordle. Aug 82, 86p NAS 1.15:84502, NASA-TM-84502

A survey was conducted to determine the opinions of readers concerning the format (organization) of NASA technical reports and usage of technical report components. A survey questionnaire was sent to 513 LaRC engineers and scientists and 600 engineers and scientists from three (3) professional/technical societies. The response rates were 74 and 85 percent, respectively. The questionnaire included the order in which users read report components, the components reviewed or read to determine whether to read a report, report components which could be deleted, the desirability of a table of contents, the desirability of both a summary and abstract, the location of the symbols list and glossary, the integration of illustrative material, the preferred format for reference citations, column layout and right margin treatment, and person/voice. The results of the reader preference survey indicated that the conclusion was the component most often ready by survey respondents. The summary, conclusion, abstract, title page, and introduction were the components used most frequently to determine if a report would actually be read. Respondents indicated that a summary as well as an abstract should be included, that the definition of symbols and glossary of terms should be located in the front of the report, and that illustrative material should be integrated with the text rather than grouped at the end of the report. Citation by number was the preferred format for references. A one-column, ragged right margin was preferred. Third person, passive voice was the style of writing preferred by the respondents.

PB83-109082 CP **T05**
Department of the Interior, Washington, D.C. Office of Library and Information Services.
MARC Bibliographic Software Package.
Software.
9 Sep 76, mag tape FSWEC-77/0277
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

The system processes bibliographic records that are in a standard MARC format. The MARC format was developed by the Library of Congress. The programs convert the MARC communications format to an internal processing one. A variety of library catalogs and special bibliographies are generated by the programs and they have the capability to do record maintenance and to build MARC-type records from local input. Tapes from the Ohio College Library Center are processed through these programs. ...Software Description: The system is written in the COBOL programming language for implementation on an IBM 360/65 computer using the OS operating system. The computer memory requirement is 225K.

PB83-114132 PC**$12.50/MF$12.50**
RHM Research Ltd., High Wycombe (England). Lord Rank Research Centre
Text Input for Computer Handling: An Assessment of Methods Available,
A. Crafts-Lighty. c1981, 32p B-131

This study of data-entry techniques was commissioned as part of a basic research program on information systems. The purpose was to survey methods for capturing textual data for subsequent computer manipulation. For the most part, only commercially available technology was considered, although a few developing methods are described. All systems were considered in terms of their compatability with the LRRC's existing and planned computer hardware and software. (Copyright (c) by RHM Research Ltd., 1981.)

PB83-114660 PC **A03/MF A01**
Instituut TNO voor Wiskunde, Informatieverwerking en Statistiek, The Hague (Netherlands).
De informatiesporenmethode (The Information Retrieval Method),
T. de Heer. May 82, 32p
Text in Dutch.

If one replaces the demand always to find the correct answer by the demand always to find the best possible answer, it is no longer absolutely necessary to introduce into the information retrieval machine comprehension of the language. One may then confine oneself to tracing agreements in meaning between documents without having to know the meaning oneself. The agreement in meaning may be calculated by means of the collection of overlapping trigrams which may be deduced for each text. The direct resemblance between two documents may be expressed in terms of the relative number of common trigrams. But an indirect resemblance may also be defined which may be obtained from the direct resemblance which each of the two documents to be compared has with each of the other documents in the collection. The final resemblance in meaning is a weighted combination of the direct and indirect resemblance. The study aims at exploring the possibility of enabling the user to put his question in natural language and at developing a system which will retrieve the best possible answer from a data bank to a specific question.

PB83-115634 PC **A09**/MF **A01**
National Bureau of Standards, Washington, DC. Inst. for Computer Sciences and Technology.
Data Base Directions Information Resource Management - Strategies and Tools: Proceedings of the Workshop of the National Bureau of Standards and the Association for Computing Machinery, Held October 20-22, 1980, at Fort Lauderdale, Florida.
Special pub. (Final),
Alan H. Goldfine. Sep 82, 177p NBS-SP-500-92
See also PB81-114076.Library of Congress catalog card no. 82-600584. Sponsored in part by Association for Computing Machinery, New York.

This report constitutes the results of a three-day workshop on information resource management tools, held in Fort Lauderdale, Florida on October 20-22, 1980. This workshop investigated how managers can evaluate, select, and effectively use information resource management tools, especially data dictionary systems. The approximately seventy workshop participants were organized into four working panels, which met to discuss uses of the Data Dictionary System, IRM Policies and Controls, Logical Database Design, and Physical Database Design.

PB83-121905 PC **A13**/MF **A01**
University of Southern California, Los Angeles. School of Medicine.
Development of an Automated Hospital Information Systems Workbook.
Final rept. 30 Sep 79-31 Mar 81,
Earl W. Brian, Dorcas R. Hardy, and Edward M. Young. 1981, 300p NCHSR-82-79
Contract DHHS-233-79-3015

In 1979, the National Center for Health Services Research of the Department of Health and Human Services awarded a contract to the University of Southern California Center for Health Services Research to develop a Workbook designed to assist hospital decision makers to select, acquire, implement, and manage an automated hospital information system (AHIS). The project focused on identifying the strengths and weaknesses of the process employed by a sample of hospitals that had implemented an AHIS. Based on an analysis of this information and the advice of experts in the field, the two-volume AHIS Workbook was developed to present a thorough, logical set of procedures in a format usable by hospital decision makers. This report summarizes the work accomplished in the development of the Workbook and associated materials.

PB83-121921 PC **E13**/MF **E13**
Commission of the European Communities, Luxembourg.
Transfer and Exploitation of Scientific and Technical Information. Proceedings of the Symposium Held in Luxembourg on June 10-12, 1981.
c1981, 369p EUR-7716-EN, ISBN-92-825-2837-5
See also PB83-121939 through PB83-122390.
Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

The general aim of the symposium was to obtain optimum exploitation of the scientific knowledge produced in the Community. Reports and discussions cover various methods of disseminating information - administrative and technical - and regret was expressed that considerable difficulties still remain in reaching ultimate information users in industry and especially in small and medium size firms, who often fail to realize their need for information. The importance of information markets was covered.

PB83-122028
(Order as PB83-121921, PC **E13**/MF **E13**)
Universitaetsbibliothek und Technische Informationsbibliothek, Hanover (Germany, F.R.).
Problems of Information Transfer and the Exploitation of Research Results with Particular Emphasis on the SME Sector,
H. Drubba. 1982, 3p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p81-83 1982.

No abstract available.

PB83-122093
(Order as PB83-121921, PC **E13**/MF **E13**)
Defence Research Information Centre, Orpington (England).
Techalert - A New Link Between Research and Industry,
E. H. Davis. 1982, 6p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p119-124 1982.

No abstract available.

PB83-122127
(Order as PB83-121921, PC **E13**/MF **E13**)
Water Research Centre, Stevenage (England).
Water Information for Europe: The Art and Technology of Communication,
P. J. Russell, W. B. Wilkinson, and R. I. Odell. 1982, 5p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p143-147 1982.

No abstract available.

PB83-122143
(Order as PB83-121921, PC **E13**/MF **E13**)
Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung e.V., Karlsruhe (Germany, F.R.). Inst. fuer Systemtechnik und Innovationsforschung.
Experience, Evaluation and Prospects of Sponsored Advisory Centres on Innovation in the Federal Republic of Germany,
G. Braeunling. 1982, 6p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p157-162 1982.

No abstract available.

PB83-122150
(Order as PB83-121921, PC **E13**/MF **E13**)
Societe des Ingenieurs et Scientifiques de France.
The Genesis of a Specialized Press in the Field of Scientific and Technical Expertise,
A. Y. Portnoff. 1982, 7p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p163-169 1982.

No abstract available.

PB83-122168
(Order as PB83-121921, PC **E13**/MF **E13**)
Scientific Documentation Centre Ltd., Dunfermline (Scotland).
Computerized Information Macro-Systems. Their Common Factors: The Oldest Under-Achieving Scientific Revolution,
P. S. Davison. 1982, 10p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p170-179 1982.

No abstract available.

PB83-122176
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
Summary of the Panel Discussion,
R. Rapparini. 1982, 4p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p180-183 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-122184
(Order as PB83-121921, PC **E13**/MF **E13**)
International Inst. of Cellular and Molecular Pathology, Brussels (Belgium).
Opening Remarks by the Chairman,
C. De Duve. 1982, 6p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p184-189 1982.

No abstract available.

PB83-122283
(Order as PB83-121921, PC **E13**/MF **E13**)
Centro Sperimentale Metallurgico, Milan (Italy).
Introduction by the Session Chairman,
G. Masi. 1982, 5p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p260-264 1982.

No abstract available.

PB83-122309
(Order as PB83-121921, PC **E13**/MF **E13**)
Societe Bertin et Cie, Plaisir (France).
Strategies of Users with Regard to Information,
Christian Lemaignan. 1982, 13p
Included in Transfer and Exploitation of Scientific and Technical Information in Luxembourg on June 10-12, 1981, p273-285 1982.

No abstract available.

PB83-122333
(Order as PB83-121921, PC **E13**/MF **E13**)
Buero fuer Wissenschaftsberatung, Frankfurt am Main (Germany, F.R.).
Transfer of Scientific and Technical Information to Political Organizations,
H. Schultze. 1982, 5p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p300-304 1981.

No abstract available.

PB83-122358
(Order as PB83-121921, PC **E13**/MF **E13**)
Commission of the European Communities, Luxembourg.
The Need to Create a New Technical Language for the Transfer of Basic Scientific Information,
J. Davidovits. 1982, 5p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p316-320 1982. Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

No abstract available.

PB83-122366
(Order as PB83-121921, PC **E13**/MF **E13**)
Belgium-Luxembourg Steel Information Centre, Brussels.

Experience of the Western European Steel Information Centers in the Communication and Transfers of Information,
P. Borchgraeve. 1982, 4p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p321-324 1982.

No abstract available.

PB83-122374
(Order as PB83-121921, PC **E13**/MF **E13**)
Kernforschungsanlage Juelich G.m.b.H. (Germany, F.R.).
Technological Planning and Innovation Management in the Field of Publicly-Funded Research,
Wolfgang Heidrich. 1982, 9p
Included in Transfer and Exploitation of Scientific and Technical Information. Proceedings of the symposium held in Luxembourg on June 10-12, 1981, p325-333 1982.

No abstract available.

PB83-123091 PC **A03**/MF **A01**
Kansas Univ., Lawrence.
Fees, Tolls, and User Charges: An Annotated Bibliography,
Charles H. Levine. 1981, 46p HUD-0002309
Grant HUD-H-2829RG

This annotated bibliography on fees, tolls, and user charges contains 354 listings of publications dating from 1960 to 1980. The publications include journal articles, private and government reports, and books. About half of the citations are annotated. Topics covered include tax policies and incentives, local government service charges, rate adjustment procedures, and enforcement methods.

PB83-124750 PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Lab. for Information and Decision Systems.
Investigations of Computer-Aided Document Search Strategies.
Final technical rept. 15 Jun 80-14 Jun 82,
Richard S. Marcus. 1 Sep 82, 75p LIDS-R-1233
Grant NSF-IST80-06516

Controlled experiments have been conducted with the enhanced experimental intermediary system CONIT (COnnector for Networked Information Transfer) to test how effective such a system could be in assisting end users in searching compared with human expert intermediary search specialists. Some 16 end users, none of whom had previously operated either CONIT or any of the 4 connected retrieval systems, performed searches on 20 different topics using CONIT with no assistance other than that provided by CONIT itself (except to recover from computer/software bugs). These same users also performed searches on the same topics with the help of human expert intermediaries. Also discussed in this report are details of the enhanced CONIT system and its costs. In addition, there are discussions of the possibilities for even more advanced intermediary systems, including those which perform automatic database selection and simulate human experts.

PB83-125609 PC **A04**/MF **A01**
General Accounting Office, Washington, DC. Accounting and Financial Management Div.
Inadequate Internal Controls Affect Quality and Reliability of the Civil Service Retirement System's Annual Report.
Report to the Congress.
22 Oct 82, 64p GAO/AFMD-83-3, B-208138

The Office of Personnel Management did not establish adequate internal control and reporting procedures to ensure the reliability of the financial and actuarial information it presented in the Civil Service Retirement System's annual report for fiscal 1980, required by Public Law 95-595 and published in February 1982. GAO found that (1) controls over computer programs used in performing actuarial valuations were weak; (2) poor recordkeeping and processing delays resulted in unreliable records of accounts receivable, and (3) relevant information, considered essential for a fair presentation of the annual report, was either omitted or not adequately disclosed.

PB83-800946 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Copyrights, 1964-November, 1982 (Citations from the NTIS Data Base).
Nov 82, 213p
Supersedes PB81-808313 and PB80-810823.

Information on national and international copyrights is reviewed in the reports cited. Citations on the problems of copyrighted materials in computer data bases and of photocopying are included. (This updated bibliography contains 205 citations, 47 of which are new entries to the previous edition.)

PB83-854372 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Engineering Information Systems. June, 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for Jun 76-Nov 82.
Nov 82, 239p
Supersedes PB81-855348.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning a description and analysis of various engineering information systems currently in operation. Engineering data base management, on-line information retrieval, computer networks, research programs and the effectiveness of industrial on-line information system are discussed. Chemical, heating and cooling, petroleum, and biomedical industrial applications are included. (This updated bibliography contains 200 citations, 175 of which are new entries to the previous edition.)

5C. Economics

AD-A120 707/5 PC **A02**/MF **A01**
RAND Corp., Santa Monica, CA.
ASEAN: What it is, What it is not, What it can be,
Guy J. Pauker. Jul 81, 17p RAND/P-6652, SBI-AD-E750 337
Prepared for the Hearings on U.S. Policy in Southeast Asia, Held on 22 Jul 81, by the Subcommittee on East Asia and Pacific Affairs of the U.S. Senate Committee on Foreign Relations.

ASEAN has the potential of becoming an important economic and political entity in world affairs. Econometric forecasts indicate that ASEAN's free market economies are likely to achieve the highest rates of growth in the Asia-Pacific region in the 1980s. Its current diplomatic activities demonstrate ASEAN's capacity to act in unison in defense of regional stability in Southeast Asia, by firm opposition to the Vietnamese occupation of Cambodia. While credit for these achievements is due to each of the five governments participating in ASEAN, the fact that Indonesia, Malaysia, the Philippines, Singapore, and Thailand were able to use a regional entity to promote their common interests is one of the positive international developments of recent years. The complexity and diversity of the region is discussed.

AD-A120 841/2 MF **A01**
American Univ., Washington, DC. Foreign Area Studies.
South Korea: A Country Study.
Area handbok series,
Frederica M. Bunge. Jul 81, 328p DA-PAM-550-41
Supersedes Rept. no. DA-PAM-550-41 dated 1975, AD-A020 638.
Availability: Superintendent of Documents, GPO, Washington, DC 20402 HC $12.00. Microfiche furnished to DTIC (and NTIS) users.

This volume is one of a continuing series of books prepared by Foreign Area Studies. The American University, under the Country Studies/Area Handbook Program. The last page of this book provides a listing of other published studies. Each book in the series deals with a particular foreign country, describing and analyzing its economic, national security, political, and social systems and institutions and the ways that they are shaped by cultural factors. Each study is written by a multidisciplinary team of social scientists. The authors seek to provide a basic insight and understanding of the society under observation, striving for a dynamic rather than a static portrayal of it. The study focuses on historical antecedents and on the cultural, political, and socioeconomic characteristics that contribute to cohesion and cleavage within the society. Particular attention is given to the origins and traditions of the people who make up the society, their dominant beliefs and values, their community of interests and the issues on which they are divided, the nature and extent of their involvement with the national institutions, and their attitudes toward each other and toward the social system and political order within which they live.

AD-A120 842/0 MF **A01**
American Univ., Washington, DC. Foreign Area Studies.
East Germany: A Country Study.
Area handbok series,
Eugene K. Keefe. Jul 81, 374p DA-PAM-550-155
Supersedes Rept. no. DA-PAM-550-155 dated 1972, AD-743 327.
Availability: Superintendent of Documents, GPO, Washington, DC 20402 HC $12.00. Microfiche furnished to DTIC (and NTIS) users.

This volume is one of a continuing series of books prepared by Foreign Area Studies. The American University, under the Country Studies/Area Handbook Program. The last page of this book provides a listing of other published studies. Each book in the series deals with a particular foreign country, describing and analyzing its economic, national security, political, and social systems and institutions and the ways that they are shaped by cultural factors. Each study is written by a multidisciplinary team of social scientists. The authors seek to provide a basic insight and understanding of the society under observation, striving for a dynamic rather than a static portrayal of it. The study focuses on historical antecedents and on the cultural, political, and socioeconomic characteristics that contribute to cohesion and cleavage within the society. Particular attention is given to the origins and traditions of the people who make up the society, their dominant beliefs and values, their community of interests and the issues on which they are divided, the nature and extent of their involvement with the national institutions, and their attitudes toward each other and toward the social system and political order within which they live.

DE82008497 PC **A04**/MF **A01**
JM Energy Consultants, Inc., Los Angeles, CA.
Tracking Federal Land Management: Report No. 3 on Federal Land Management Actions Impacting Geothermal Commecialization at Selected Target Prospects in the Five Pacific Rim States.
20 May 80, 57p DOE/ET/27241-T7
Contract AC03-79ET27241
Portions of document are illegible.

Generic land management actions affecting geothermal commerializtion in Pacific River states are reviewed. Specific federal land management actions affecting geothermal prospects in California and the Pacific Northwest are described. (ERA citation 07:046468)

ED-202 454 Not available NTIS
University of Southern California, Los Angeles. Office of Interdisciplinary Program Development.
A Technology Assessment of Personal Computers. Vol. III: Personal Computer Impacts and Policy Issues,
Jack M. Nilles. Sep 80, 342p OIP/PCTA-80-3/3
NSF-PRA78-05647
For related documents, see IR 009 298-300.
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

A technology assessment of personal computers was conducted to study both the socially desirable and undesirable impacts of this new technology in three main areas: education, employment, and international trade. Information gleaned from this study was then used to generate suggestions for public policy options which could influence these impacts. Four primary methods were used to develop the information for the policy analysis stages of the assessment: (1) search and analysis of the relevant literature, (2) development of a series of scenarios of alternative futures, (3) performance of two Delphi surveys and a cross-impact analysis based on these scenarios, and (4) interviews and/or surveys of the potentially affected stakeholders and decision makers. Tables of data are included as well as a list of references. Appendices include Delphi questionnaires with summaries of findings and an employment questionnaire used in the study.

ITA-82-11-600 PC$15.00/MF **A01**
Economic Consulting Services, Inc., Washington, DC.
Analysis of the Export Development Potential of the U.S. Industrial and Scientific Instrumentation Industry.
Aug 82, 181p
Contract TA-81-SAC-00843

This study presents information on the problems and needs of firms in the U.S. instrumentation industry in developing and increasing exports. Specifically, the study identifies: - areas of export strength and likely sources of future export opportunities; - techniques used by different types of firms to export successfully; - major determinants and sources of competition in foreign markets, and how these vary by product type and geographic area; - major problems which have prevented firms from realizing their full export potential, ranking these problems in order of importance, and specifying which groups within the industry are most affected by these problems; - firms' expectations of future changes in export activities and problems; and - manufacturers' perceptions as to the role of Government, and ways in which the Government can assist firms in their export efforts.

ITA-82-11-601 PC$15.00/MF **A01**
Economic Consulting Services, Inc., Washington, DC.
Analysis of the Export Development Potential of the U.S. Computer, Peripherals, and Business Equipment Industry.
Final rept.
Aug 82, 201p
Contract TA-81-SAC-00843

This study presents information on the problems and needs of firms in the U.S. computers and business equipment industry in developing and increasing exports. Specifically, the study identifies areas of export strength and likely sources of future export opportunities; techniques used by different types of firms to export successfully; major determinants and sources of competition in foreign markets, and how these vary by product type and geographic area; major problems which have prevented firms from realizing their full export potential, ranking these problems in order of importance, and specifying which groups within the industry are most affected by these problems; firms' expectations of future changes in export activities and problems; and manufacturers' perceptions as to the role of Government, and ways in which the Government can assist firms in their export efforts.

ITA-82-11-602 PC$15.00/MF **A01**
Economic Consulting Services, Inc., Washington, DC.
Analysis of the Export Development Potential of the U.S. Telecommunications Equipment Industry.
Final rept.
Aug 82, 211p
Contract TA-81-SAC-00843

This study presents information on the problems and needs of firms in the U.S. telecommunications equipment industry in developing and increasing exports. Specifically, the study identifies areas of export strength and likely sources of future export opportunities; techniques used by different types of firms to export successfully; major determinants and sources of competition in foreign markets, and how these vary by product type and geographic area; major problems which have prevented firms from realizing their full export potential, ranking these problems in order of importance, and specifying which groups within the industry are most affected by these problems; firms' expectations of future changes in export activities and problems; and manufacturers' perceptions as to the role of Government, and ways in which the Government can assist firms in their export efforts.

N82-34291/6 PC **A03**/MF **A01**
Stanford Univ., CA. Program in Information Policy.
Private Financing and Operation of a Space Station: Investment Requirements, Risk, Government Support and Other Primary Business Management Considerations.
Final Report.
M. Simon. Sep 82, 31p NAS 1.26:169357, REPT-43, NASA-CR-169357
Contract NASW-3204

Private investment in a manned space station is considered as an alternative to complete government sponsorship of such a program. The implications of maned space operations are discussed from a business perspective. The most significant problems and risks which would be faced by a private company involved in a space station enterprise are outlined and possible government roles in helping to overcome these difficulties suggested. Economic factors such as inflation and the rate of interest are of primary concern, but less obvious conditions such as antitrust and appropriate regulatory laws, government appropriations for space activities, and national security are also considered.

PB83-110684 PC **A04**/MF **A01**
General Accounting Office, Washington, DC. Accounting and Financial Management Div.
Government-Industry Cooperation Can Enhance the Venture Capital Process.
12 Aug 82, 64p GAO/AFMD-82-35, B-206827

Venture capitalists seek out new technology, entrepreneurial talent, and management resources and combine them for new business opportunities that have significant market growth potential. Compared to the amount of capital invested to create fast-growing, high-technology businesses, this small segment of the U.S. economy has produced disproportionately large benefits to the Nation's productivity and economic well-being. In the 1970s, the problem was the limited supply of venture capital. In the 1980s, however, the problem may be too few experienced venture capitalists to manage a growing supply of capital. The venture capital process is very sensitive to Government policies, rules, and regulations. Industry and Government should work together to identify pertinent issues and suggest actions needed by either or both sides to create the greatest likelihood of a successful venture capital process in an environment of increasing capital supply.

PB83-110692 PC **A04**/MF **A01**
General Accounting Office, Washington, DC. International Div.
Bank Examination for Country Risk and International Lending.
2 Sep 82, 51p GAO/ID-82-52, B-207990

The U.S. bank regulatory authorities have adopted a uniform examination system for evaluating and commenting on country risk to U.S. banks with relatively large foreign lending. GAO found that the system's objectives need to be better communicated, its standards and administration are good but could be improved, and its impact is questionable.

PB83-112508 PC **A02**/MF **A01**
National Marine Fisheries Service, Washington, DC.
Fish Meal and Oil Market Review.
Current economic analysis,
Bruce C. Morehead, John Vondruska, and James S. Roberts. Jul 82, 24p I-37, NOAA-83080603

Prices of fish meal and oil touched their lowest levels since 1976 in 1981 or early 1982, because of demand weakness which more than compensated for the declines in world production in 1981. The low price for fish oil occurred in September 1981 amidst brisk selling efforts. The reduction in world stocks of fish oil contributed to modest price strength since then, as did what appears to be a pattern of greater strength in prices of major oils than of major meals in early 1982. Prices of fish meal may have hit their post-1976 low in April 1982. According to estimates, the decline in world production of fish meal in 1981 was not as great as the declines in exports and consumption, and stocks increased in major exporting countries.

PB83-112961 PC **A08**/MF **A01**
General Accounting Office, Washington, DC. Community and Economic Development Div.
Analysis of Options for Aiding the Homebuilding and Forest Products Industries.
31 Aug 82, 152p GAO/CED-82-121, B-207915

Concern over the continuing economic recession and the downturn in the housing industry has prompted a wide variety of proposals to aid housing finance and homebuilding. Although none of these proposals is likely to bring about a long-lived recovery for housing unless overall interest rates decline, certain proposals could start up quickly and be more cost effective than others in providing some short-term relief. GAO analyzed the causes of the current downturn in housing construction and compared a broad sample of homeownership and rental housing stimulus proposals. These were compared in terms of their feasibility, speed of implementation, impact on construction and employment, and cost effectiveness. GAO also prepared a special analysis of the problems of the forest products industry.

PB83-113282 CP **T02**
General Services Administration, Washington, DC.
Labor Surplus Area Zipcode Reference.
Data file,
Calvin Snowden, and J. K. Payne. Sep 82, mag tape GSA/DF-83/001
Supersedes PB82-191628.
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

The labor surplus area (LSA) program gives preference or priority to businesses located in areas with high unemployment in the award of Federal contracts. The Labor Surplus Area Zipcode Reference file makes it possible to use the zip code in a firm's address as a way of determining LSA eligibility. The U.S. Department of Labor (DOL) supplied the list of LSA's used to prepare this file. This list consists of areas classified as LSA's by DOL in the June 4, 1982, Federal Register as well as DOL changes to the list dated July 9, 1982, and August 13, 1982. The total number of LSA's represented in this file is 1,275. The automated source for zip codes was the Federal Information Processing Standards Publication 55 (FIPS PUB 55) dated February 2, 1982.

PB83-113498 PC **A07**/MF **A01**
Barclays Bank Ltd., London (England).
ABECOR Country Reports, 1982 Update.
Oct 82, 135p
See also PB82-178427.

Analytical summaries are provided of the economic situation of various countries. The material has been gathered and summarized by members of ABECOR, an association of European banks. It is intended as a reference for those interested in doing business in other countries.

PB83-114199 PC **A07**/MF **A01**
Georgia Univ., Athens. Small Business Development Center.
Capacity Analysis of Georgia Miniority Contractors.
Final rept.,
James S. Trieschmann, and Don Hardigree. 5 Oct 82, 132p
Grant SB-1A-00008-01-0

Critical economic, political, and social factors which result in the under-representation of Minority Business Enterprises (MBE) in Government funded projects are identified in this study. The research ascertains the capacity of the MBE to perform the work required for participation in such projects.

PB83-114231 PC **A12**/MF **A01**
Ohio State Univ. Research Foundation, Columbus.
The Decline of the Lessee Gasoline Dealer.
Final rept. 1 Sep 80-30 Apr 82,
Howard P. Marvel. 28 Sep 82, 259p
Grant SB-1A-00007-01-0
Portions of this document are not fully legible.

The research will employ the economic theory of principal agent relations to formulate a model of the refiner's decision to operate service stations through an independent operator or on a company-owned basis. This model will allow for an assessment of the likely impact of legislatively imposed franchise restrictions on the growth rate of company ownership and indirectly on that of the unbranded segment of the marketplace.

PB83-115220 PC **A15**/MF **A01**
Federal Trade Commission, Washington, DC. Bureau of Competition.
Mergers in the Petroleum Industry.
Sep 82, 345p FTC/COMP-07-82

The study provides a brief overview of the petroleum industry and discusses the numbers and size and the description of the terms of such mergers in each of the last ten years; factors which influence such mergers, including the role of oil price decontrol; the impact on

competition and on the availability and prices of petroleum products to consumers; the effect of acquisitions in diverting investment captial for the exploration and development of energy sources; the extent of concentration in each major sector of the industry, the impact of such concentration on competition, and the impact of mergers on concentration levels; the transaction costs of such mergers; and the extent of any asserted efficiency justification for such mergers. Three appendices contain an outline specifying the data used in preparing the report, background correspondence and separate statements concerning the report from three Commissioners.

PB83-115451 PC **A03**/MF **A01**
Michigan Univ., Ann Arbor. Sea Grant Program.
Great Lakes Shipping, Transportation and Markets for Michigan's Forest Products: A Preliminary Economic Inquiry,
R. B. DenUyl, and Dean R. Whitehill. 1982, 31p MICHU-SG-82-500, NOAA-82093013
Grant NA80AA-D-0072
Prepared in cooperation with Michigan State Univ., East Lansing.

The study is divided into two parts. First, a market analysis is provided on Michigan forest products both within the state and out of state. Second, an economic analysis is provided on water transport of the forest products.

PB83-115527 PC **A03**/MF **A01**
Rhode Island Univ., Narragansett. Marine Advisory Service.
An Economic Evaluation of Foreign Fishing Allocations,
Eric Meuriot, and John M. Gates. 1982, 46p URI-MARINE TR-84, NOAA-82092101
Grant NA79AA-D-00096

The study illustrates a useful approach to estimating values for the policy-making process of assigning foreign fishing allocations. An economic model is devised which can be applied to the fishing zones of the Bering Sea and Aleutian Islands, the Gulf of Alaska, and the Pacific West Coast of California.

PB83-115725 PC **A03**/MF **A01**
Iowa State Univ., Ames.
The Development of Nigerian Industrial Economy and the Prospects for U.S. Investment and Business Partnership,
Modestus Okere, and Howard Van Auken. 1982, 38p

This comprehensive study of the Nigerian economy will help a businessman understand the import and contract policies of the Nigerian government, and points out likely areas of investment opportunity. The paper reviews Nigerian loan borrowing, money supply, revenue, national development plans, budgets, oil industry, banking, industrial growth, steel, automobile production, textiles, cement, breweries, transport, economic growth, and agriculture. The report then builds on the above basic data in outlining investment opportunities for U.S. business, starting with the incentives Nigeria has offered to foreign firms to invest in Nigeria. Sections in this chapter are devoted to farming, construction, poultry and cattle feed operations, petrochemicals, telecommunications, education, health care, electricity, consumer goods, control of foreign exchange, effects of indiginization, Nigerian partnership policies, Nigerian and American bi-lateral talks on economic problems, and long- and short-term outlook for investments.

PB83-116558 PC **A99**/MF **E16**
Civil Aeronautics Board, Washington, DC.
Economic Cases of the Civil Aeronautics Board. Volume 86, July to September 1980. Parts I and II.
1980, 2557p

The report contains a detailed description of economic cases reviewed by the Civil Aeronautics Board from July 1980 to September 1980. The arguments presented by the contesting parties and the case rulings are included.

PB83-117291 PC **A03**/MF **A01**
Federal Communications Commission, Washington, DC. Office of Plans and Policy.
Statistical Determinants of Radio Stations' Revenues and Trading Prices.
Working paper no. 9 (Final),
James A. Brown, Jr. Aug 82, 46p

This study estimates the effects of AM power, AM frequency, FM power, consumer income, number of competing stations in a market area, and whether a station is located in the central part of its market area. These variables show approximately the same percentage effects on trading prices as on revenues. The following variables have no statistically significant associations with revenues: newspaper circulation, automobile registration, and number of TV stations in a market area; whether an AM station has nighttime signal protection and/or uses a directional antenna; and whether a station has network affiliation. The data suggest somewhat more than one-half of a new station's revenues are likely on average to come from advertising dollars not previously spent on radio.

PB83-117333 PC **A08**/MF **A01**
Resource Management Consultants, Inc., Boulder, CO.
Small Business in the Emerging Energy Technologies.
Final rept.,
Michael D. Yokell. 30 Sep 82, 172p
Grant SB-1A-00011-01

The original purposes of this work were twofold: first to determine the effect of federal procurement and loan policies (such as those of the Small Business Administration) on the size distribution of firms in the solar, photovoltaics, and biomass industries, and second, to examine the structure of these industries with a view toward where future opportunities might lie for small business.

PB83-117861 PC **A07**/MF **A01**
SRI International, Menlo Park, CA.
Using Nonservice Approaches to Strengthen Small Business: A Guide for Local Officials.
Conference draft (Final),
James O. Gollub. Nov 80, 141p
Contract SBA-2653-OA-79

This guide presents ways that local governments can address problems confronting small businesses by redefining traditional policy relationships between local governments and the private sector. Its major focus is on what can be called 'nonservice approaches' to small business problems. Nonservice approaches--which complement service and direct lending approaches--serve small business needs through the purposeful shaping of local government policies (regulatory, administrative, tax) and the redefining of relationships in the community in order to leverage change in the behavior of the marketplace, institutions, and individuals in ways that will enhance opportunities for small business.

PB83-117879 PC **A07**/MF **A01**
Venture Economics, Wellesley Hills, MA.
Venture Capital Investment in National Need Areas.
Final rept.
9 Sep 82, 141p
Sponsored in part by Small Business Administration, Washington, DC.

This report presents preliminary data relating to venture capital investment in national need areas as well as providing an overview of the industry's recent history and illustrating the potential uses of a data-base dedicated to tracking the venture capital industry.

PB83-118059 PC **A02**/MF **A01**
Popkin (Joel) and Co., Washington, DC.
Measures of Gross Product Originating in Businesses with 0-19 Employees and 5,000 or More Employees, 1963 and 1972.
Final rept.,
Joel Popkin. Dec 80, 12p
Contract SBA-2624-OA-79

This study provides estimates of the Gross Product Originating in businesses having 0-19 employees and 5,000 or more employees for the years 1963 and 1977. The data are presented for the major industry sectors of mining, manufacturing, wholesale trade, retail trade and services.

PB83-118109 PC **A02**/MF **A01**
Florida Cooperative Extension Service. Marine Advisory Program.
Economic Returns in Operating Florida Atlantic Coast Charter and Party Boats, 1980 - 1981,
Keri H. Taylor, Fred J. Prochaska, and James C. Cato. Aug 82, 21p MAP-28, NOAA-82091306
Grant NA80AA-D-00038

This bulletin attempts to (1) provide individual charter boat and party boat owners/captains with basic economic information with which they can compare their own operations and (2) compare the economic characteristics of the charter boat industry on the north and south Florida Atlantic coasts. This has been accomplished by providing (1) a description of the general characteristics of charter boats and partyboats in the fleet; (2) an analysis of fishing activity, costs and returns; and (3) a comparison of the differences in charter boat operations between north and south Florida.

PB83-118992 PC **A05**/MF **A01**
Transportation Systems Center, Cambridge, MA.
Entry and Competition in the United States Transit Bus Manufacturing Industry,
R. Weiers, and M. Rossetti. Mar 82, 92p DOT-TSC-UM262-PM-82-12, UMTA-MA-06-0120-82-2

This report is an analytic paper addressing the trend toward entry into the U.S. transit bus market by new foreign manufacturers. The purpose of this study is to provide an explanation, and outline the implications of why so many companies are interested in entering the U.S. bus manufacturing industry, when there is no excess capacity, and the established manufacturers are not prospering. The study is concerned primarily with the industry that builds standard and large-capacity transit buses. The explanation developed for the emerging interest in the U.S. bus manufacturing industry consists of three categories of causes: opportunity, impetus, and contributing factors.

PB83-122895 PC **A04**/MF **A01**
Minnesota Univ., Minneapolis.
Pricing Private Mortgage Insurance,
Craig Swan. Aug 81, 51p HUD-0002279
Grant HUD-H-5440SG

This paper considers issues in the evaluation of the price of private mortgage insurance (PMI). It discusses the PMI industry and examines alternative approaches to an evaluation of the pricing of PMI. Modern PMI started with the formation of the Mortgage Guaranty Insurance Corporation in Wisconsin in 1957. PMI ensures the top 20 percent of the outstanding loan balance plus allowable costs related to foreclosure. PMI companies are regulated by the individual States in which they are licensed to do business. The paper seeks to assess the competitiveness of the industry by focusing on the demand for and supply of PMI. A detailed analysis of the relationship between price and marginal cost is given. It is concluded that the important price determining factors on the cost side are the cost of writing insurance and the frequency of claims arising from foreclosures. The determinants of foreclosure are analyzed. Also discussed are option models as an alternative approach to an evaluation of the price of mortgage insurance. The paper concludes that alternative approaches must be explored in order to evaluate the price of PMI, given inherent measurement difficulties. However, the empirical evidence necessary to form an overall judgment are nonexistent. Therefore, several directions are suggested to accumulate the necessary evidence; these include research on the importance of macro factors in explaining foreclosure experience on estimates of implicit insurance premiums from a comparison of mortgage rates on uninsured loans and either rates on insured loans or rates on synthetic, but comparable, risk free assets. An annotated bibliography of mortgage default studies and 25 references are provided.

PB83-123109 PC **A02**/MF **A01**
Kansas Univ., Lawrence.
Urban Economic Development: An Annotated Bibliography,
Charles H. Levine. 1981, 18p HUD-0002310
Grant HUD-H-2829RG

This annotated bibliography on urban economic development contains 58 citations, ranging from journal articles and popular magazine articles to government reports. The listings date from 1979 to 1981. A few of the

entries are not annotated. Topics covered include urban renewal, foreign investment, enterprise zones, urban zoning, public - private partnerships, urban waterfront investment, and the role of banking in local economic development.

PB83-123190 PC **A04**/MF **A01**
Real Estate Research Corp., Chicago, IL.
Passive Solar Homes in the Marketplace: Final Report of Findings of the 1978-1979 Passive Grant Awards. Volume 1: Discussion, Winter 1981-82,
Etta I. Roth. 1982, 51p HUD-0002319
Contract HUD-H-2372

The report describes the findings of a two - year market evaluation of passive solar homes conducted between 1979 and 1981. Study data derive from a survey of 56 speculative sale homes and 17 custom homes which received awards as part of the 5 - year demonstration program funded and administered by the U.S. Department of Energy and HUD. Most of the designers and construction firms interviewed had previous experience with passive solar design, specialized in local single - family houses, and were building solar houses for economic and philosophical reasons. Respondents agreed that it took more time and money to build a solar house but that the passive features added value to the house. The most frequently cited problems in the construction process were finding experienced laborers, obtaining the necessary materials, and obtaining construction financing. The typical passive speculative house was a modern, two - story structure with a wood exterior, three bedrooms, two bathrooms, a garage, and a fireplace and / or woodstove; it contained 1800 square feet and was situated on a one - third acre lot. Predominant passive features were direct gain heating systems, design and siting for natural ventilation, sunscreening devices, special flooring, vents, mass Trombes, earth berms, movable insulation, greenhouses, minimum perimeter designs, water Trombes (including drumwalls), and indirect sunspaces. Compared with speculative homes, custom homes have fewer bedrooms and bathrooms and lack central air conditioning. Most speculative homes surveyed were located in moderate growth areas that attract discretionary home buyers. Houses cost about $50.72 per square foot, with incremental costs of $3.97 per square foot for passive features. The typical buyers consisted of two well - educated adults in their late thirties, employed in professional, technical, and related occupations. In most cases, purchasers bought houses because of potential fuel and energy savings, environmental concerns, and interest in new technology. Virtually all purchasers were satisfied with the performance of their passive solar systems and with fuel savings and environmental gains. Lenders rarely differentiated between passive solar and conventional homes and even felt that solar features enhanced the value of a home. In general, lenders, builders, designers and buyers all revealed a sustained and growing commitment to the concept of passive solar energy. Graphs, tables, notes, photographs, and five references are supplied.

PB83-123257 PC **A08**/MF **A01**
Real Estate Research Corp., Chicago, IL.
Passive Solar Homes in the Marketplace: Final Report of Findings of the 1978-1979 Passive Grant Awards. Volume 2: Data, Winter 1981-82,
Etta I. Roth. 1982, 170p HUD-0002326
Contract HUD-H-2372

This volume provides technical details regarding a report on the passive solar home demonstration program sponsored from 1975 to 1979 by the U.S. Department of Energy and HUD. The volume is intended as a companion volume to the total report in that it explains the technical structure of the demonstration program, the data collection methods, the survey instruments, and the limitations of the data base. The demonstration was intended to test and facilitate market readiness for residential solar energy systems. Grants were awarded for design, design and construction, or for construction only. A total of 73 grant award sites, each with one new single - family housing unit, were surveyed. Units were chosen for marketability, project readiness, and overall design integrity and were located in 28 States. Almost 350 interviews were conducted with associated designers, builders, purchasers, and financial institutions. Among limitations of the data collection and analysis were the use of a small, nonrandom sample; the lack of a control group; the large proportion of custom homes; the limited geographic distribution; the poor housing market which existed at the time of the survey; and limitations of comparisons with active solar homes or with conventional homes. The main means of data collection was the field survey, which was conducted by staff experienced in market analysis. Various HUD publications and grant files were also used to augment the survey findings. This volume's presentation follows the outline of the written report, with the questions shown in each chapter in the order in which they are referenced in the text. Individual chapters cover design and construction, descriptions of the homes studied, marketing of passive homes, purchasers of passive homes, financial institutions involved in loans, and followup interviews with builders and designers. Extensive tables and a list of 5 references are provided.

PB83-123273 PC **A05**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Conversion of Rental Housing to Condominiums and Cooperatives: Impacts on Housing Costs.
Aug 81, 88p HUD/PDR-692, HUD-0002330

This report deals with the financial impacts of the conversion phenomenon on different types of households, including those who lived in rental buildings prior to their conversion and those who moved in following conversion. Data are from a survey conducted in January 1980 of current and former residents of buildings converted to condominiums and cooperatives between 1977 and 1979 in 12 metropolitan areas which had a large volume of conversion activity. Of all households occupying rental units in buildings whose conversion began after January 1977, 58 percent had moved out as of January 1980. A total of 22 percent of all preconversion households bought their units and a little more than half of them paid more than two and one - half times their annual incomes to do so. The amount of money people pay for housing usually changes as a result of condominium and cooperative conversions. The extent and direction of this change varies considerably among different groups. Before counting tax benefits and appreciation, renters who became buyers experienced the largest increases in total housing costs. Renters experienced less of a change in housing costs than buyers, although they cannot take advantage of tax savings or appreciation. All of those who rented after conversion experienced an average increase of 20 percent in their total housing costs, compared to all renters in metropolitan areas who experienced an average increase of 9 percent during the same time period. As a group, households involved in the conversion process (those who moved in and those who moved out) paid higher proportions of their income for housing than others. Footnotes, tables, and cost data are supplied. (Author abstract modified).

PB83-123372 PC **A07**/MF **A01**
Urban Inst., Washington, DC.
Manual for Operation of the Urban Institute Housing Model With Income Taxes,
Michael W. Andreassi. Aug 78, 126p UI-1116/5, HUD-0002343
Contract HUD-H-2162R-T034

This paper is the third in a series of manuals describing the computer program for solving the Urban Institute Housing Model, a mathematical model of 10 - year changes in the quality and location of housing within a metropolitan area. The program deals with interactions among households, existing dwellings, and potential new dwellings. Each household is characterized by tenure (owner or renter), household type, and two measures of income -- actual and permanent. Each dwelling is located in one of several zones and has a given level of housing services. Its owner tries to choose its final price and level of housing services so as to maximize expected profits. New dwellings are available to any purchaser at a fixed price per unit of services, subject to building code minimums. The program investigates one trial solution after another until it finds one in which each household prefers the dwelling it is in to all others and each landlord has no incentive to alter the price or quantity of services offered. The program incorporates the personal income tax system in the model and examines how the owner - occupant provisions of the income tax affect housing consumption. It focuses on the algorithm for seeking a solution to each run of the model and how the algorithm has been altered to incorporate income taxes. The paper provides operating instructions for the current version of the model on a CDC 6000 Series computer. A sample data file, a program listing, and an example of program output are appended. (Author abstract modified).

PB83-123398 PC **A03**/MF **A01**
Urban Inst., Washington, DC.
Simulating the Impact of Capital Cost Reductions With the Urban Institute Housing Model,
Ann Burnet Schnare, and John W. Hartman. Feb 76, 47p HUD-0002346
Contract HUD-H-2162R

This paper uses the Urban Institute Housing Model to simulate the impact of a hypothetical capital cost reduction brought about by the provision of FHA mortgage insurance in older, declining areas. The impact of two separate policies are examined: one which reduces the capital costs of black owner - occupants and one which reduces the capital costs of black renters as well as owners. The major advantage of the Urban Institute Housing Model is that it controls for both immobility and the immalleability of the existing housing stock. The model, by assuming that individual dwelling units cannot be readily converted, is able to capture the short - run and medium - run factors that influence housing market behavior. The two policy simulations are conducted for two different "prototypical" standard metropolitan statistical areas (SMSA's): (1) a slow growth, high minority city, with an inelastic supply of housing services from existing stock and (2) a fast growth, high minority city, with an elastic supply of housing. The model analyzes 10 - year changes in the location of households and in the price and the quantity of housing services within a given metropolitan area; divides the area into four or five zones defined to maximize their initial racial and socioeconomic homogeneity; and describes the behavior of individual households, landlords, builders, and the government. In both cities, the major impact of the capital cost reductions was to decrease the unit rental price paid by blacks and to increase the quantity of housing services which they consumed. In the slow growth, inelastic SMSA, blacks typically moved to upgrade their housing consumption. In the fast growth, elastic city, housing demands were normally met by upgrading units in existing black areas. Figures, tables, and footnotes are included.

PB83-123430 PC **A03**/MF **A01**
Urban Inst., Washington, DC.
Owner-Occupant Housing and the Income Tax,
C. Duncan MacRae, and Raymond J. Struyk. Aug 77, 33p HUD-0002350
Contract HUD-H-2162R-T034

This paper presents a comprehensive static analysis of the production and consumption of housing services by owner - occupants subject to a progressive income tax. A model of the production and consumption of housing by owner - occupants is developed, and the effects of the homeowner deductions on demand and supply are analyzed under a proportional income tax. Results indicate that except at the boundaries between tax brackets, the effect of a progressive tax on the production of housing services is the same as the effect of a proportional tax of equivalent marginal and, hence, average rate. Housing is more land intensive and less maintenance intensive than it would be in the absence of the deduction for interest and property taxes since all land expenses are deductible and maintenance is not. The effect of the homeowner deductions on demand, however, is potentially different than it would be under the proportional income tax. If housing deductions are large enough to reduce the owner - occupants marginal tax rate, then the effect of the deductions is not only to reduce the effective price of housing services but also to increase effective income in the amount of the taxes saved by not being taxed at the higher marginal rate. These results have strong implications for the estimation of housing demand and production functions of owner - occupants. In particular, the price and income variables on the demand functions have been misspecified in the past, as have the price variables in functions estimated to derive the elasticity of substitution among factor inputs. Footnotes and graphs are included. (Author abstract modified).

PB83-123570 MF **A01**
Congressional Budget Office, Washington, DC.
Tax Treatment of Homeownership: Issues and Options,
Joshua E. Greene. Sep 81, 91p HUD-0002370
Available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, order number 052-070-05641-0.

This report examines the current Federal income tax provisions benefiting homeownership and their effect on nonresidential investment, the housing market, and the tax system. The paper focuses on five major tax provisions that benefit homeowners: the deductibility of home mortgage interest payments and property taxes for owner - occupied homes; the deferral of capital gains from home sales; the exclusion from taxable income of $125,000 in capital gains from home sales of persons aged 55 and older; and the use of tax - exempt bonds to finance owner - occupied housing. The paper also discusses the exclusion from taxable income of net imputed rental income -- the income homeowners implicitly earn from owning and occupying (rather than renting out) their homes. For each of these factors, the paper presents a history of tax provision, its estimated revenue loss, and where possible, a distribution of tax savings by income group. The major effects of the tax treatment of homeownership are explored, including a discussion both of the direct effect of these subsidies on after - tax housing costs and of the side effects they have for the rest of the economy. Special attention is paid to the effects of the tax provisions on business capital formation, on rental housing, on house prices, and on the structure of the income tax. The final chapter analyzes several policy options, including one that would maintain current law, one that would reduce existing tax subsidies, and one that would alter the capital gains exclusion for home sales. Tables, figures, and footnotes are supplied. Appendices present a brief overview of other Federal programs to assist homeownership and a brief account of new mortgage instruments that have begun to displace fixed - interest - rate loans as the standard home mortgage. (Author abstract modified).

PB83-123620 PC **A03**/MF **A01**
Urban Inst., Washington, DC.
Impact of Intergovernmental Grants on Urban Capital Finance,
George E. Peterson. Jul 81, 28p HUD-0002375
Contract HUD-H-2884-T10

Issues in intergovernmental capital grants financing are examined. The report deals with the impact that the Federal grants structure has had on State and local capital spending and examines Federal needs standards and the estimation of investment needs gaps. It also analyzes the States' role in matching Federal capital assistance to local investment projects, thereby giving operational meaning to the capital aid structure. Federal assistance, though still accounting for only two - fifths of State - local capital financing, has been the principal force shaping the direction of public capital investment. Federal aid programs have benefitted some activities (i.e., bridge repair, wastewater treatment) and have ignored others (i.e., highway investment, school investment). The new Administration's recommendations to curtail capital aid should have major impacts on the future capital budgets of State and local governments. The major capital assistance programs are intended to help localities meet the costs of achieving the "needs" standards that are built into Federal legislation. However, the Federal Government seems to reward localities for past failure to maintain standards rather than those which have attempted to meet the requirements. The Federal Government also attempts to avoid capital assistance altogether for that are judged to be local responsibilities. Most public investment needs gaps will be closed by reexamining needs standards and lowering them to meet budget constraints, rather than by boosting investment levels to satisfy current standards. The States' discretion as to how strictly to adhere to the Federal needs priorities when allocating funds to capital projects would be enlarged if the Federal aid program was moved towards a block grant structure, as has been proposed for some functional areas. Footnotes and tables are included.

PB83-123638 PC **A04**/MF **A01**
Urban Inst., Washington, DC.
Fiscal Consequences of Urban Decline in Organisation for Economic Cooperation and Development (OECD) Countries,
Harold Wolman. Dec 81, 72p HUD-0002376
Contract HUD-H-2884-T11

This paper first discusses hypotheses related to the possible effects of urban population decline on the cost of providing and the demand for local public services and the effect of decline on the local tax base. Then the actual fiscal consequences or urban decline in cities or sets of cities in several different countries and the resulting changes in city fiscal behavior and circumstances are discussed. The conclusion discusses reasons why fiscal behavior and circumstances have differed from country to country. The countries examined are the United States, the United Kingdom, the Federal Republic of Germany, Denmark, and Sweden. In the first three cases, the focus is on a set of large declining cities, while in Denmark and Sweden, Copenhagen and Stockholm are examined respectively. Among the factors considered to affect differing circumstances among declining cities, and thus their differing fiscal responses, are the nature of the local tax base, the type of services local government is charged with providing, the relationship among levels of government in the provision of services, the role of central and intermediate levels of government in the provision of services, the role of central intermediate levels of government in the provision of fiscal assistance (level of aid provided and its distribution mechanisms), and the impact of local public opinion and politics. The report concludes that, in general, increasing levels of government assistance have played the major role in sheltering cities from the fiscal effects of population decline. The leveling off of intergovernmental aid in the 1980's is likely to present many declining cities with the difficult choice between increasing tax rates and burdens or decreasing real expenditure and service levels. Tables and 29 references are given.

PB83-123646 PC **A02**/MF **A01**
Urban Inst., Washington, DC.
Targeted Tandem, Builder Profits and Rents: A Simulation Study,
William B. Brueggeman. Jan 82, 23p HUD-0002378
Contract HUD-H-2893-TO2

This paper makes estimates of after - tax rates of return on equity invested in Government National Mortgage Association (GNMA) Targeted Tandem and Section 8 Tandem projects under the following assumptions: (1) that program project characteristics are typical of Tandem experience, and financing is done through 7.5 percent subsidized mortgage interest rate loans made during 1978 - 1979; (2) that projects characterized by (1) are coupled with special tax treatment afforded investors in low - income projects (Section 8); and (3) that projects characterized by (1) and (2) are financed at market interest rates for otherwise equivalent rental units. A model simulates the impact of tandem on builder - developer profits, using data based on 22 Targeted Tandem and Section 8 Tandem projects in Philadelphia, Pa., New York City, N.Y., and Sacramento, Calif. A baseline case is established from sample mean project characteristics against which the simulations are compared. The principal conclusion from the simulations is that Tandem financing results in rates of return to builders much higher in after - tax terms than would be available under conditions of market rate financing. Secondly, profitable projects, after tax, may generate negative cash flows and may thus be rejected on an a priori basis. It is contended that either flexible rate financing or an auction process would be more efficient in subsidizing Section 8 Tandem construction than is the current before - tax underwriting and mortgage subsidy scheme. Furthermore, if excess builder profits are fully passed on to renters in Section 8 Tandem projects, rents would be about 25 percent lower than in market - rated financed projects. But since the supply of subsidized projects is low relative to all rental units, all benefits of the Tandem subsidy are capitalized into prices and captured by builder - developers. The Tandem program, although not significantly affecting the housing stock, may have a significant counter - cyclical effect, but the evidence on this is not definitive. Tabular data, footnotes, and nine references are given.

PB83-123786 PC **A08**/MF **A01**
Research Triangle Inst., Research Triangle Park, NC.
Revitalization in Washington, D.C.: An Analysis of Change From 1970-1978,
Frank F. De Giovanni, and Robert M. Ray. 1981, 153p HUD-0002410
Contract HUD-H-2985-T02

This study examines trends in neighborhood revitalization in Washington, D.C., and demonstrates the usefullness of the District's Municipal Automated Geographic Information System (MAGIS) for identifying areas of impending neighborhood change. Changes in revitalization indicators are examined for each 1970 census tract in the District for the period 1970 - 1978. Revitalization in D.C. prior to 1970 has occurred in the Capitol Hill area, in areas north of Dupont Circle (i.e., Adams Morgan), and in other inner city areas. Revitalization at that time tended to begin first in neighborhoods where the quality of original housing construction was highest. Inflation in housing prices during the 1970's was felt throughout the city, particularly in poor areas. Revitalization after 1972 was characterized by a greater frequency of speculative sales and was no longer restricted primarily to neighborhoods with quality housing. The District's housing problem after 1975 was caused primarily by a shortage of affordable housing for lower - to - moderate income households due to tremendous increases in the price of housing in lower income neighborhoods. The MAGIS data base has the advantage of providing a machine - readable time - series of data describing property transactions for an entire city. It combines a wide range of housing market data and is useful for monitoring and analyzing neighborhood change. It also facilitates statistical and graphical analyses of the spatial and temporal dimensions of revitalization. The MAGIS data base limitations may derive from municipal recordkeeping practices and not from the way data sources are integrated in the information system. An analysis of the relationship between census tract characteristics and indicators of neighborhood revitalization is appended. Maps, endnotes, tables, and about 30 references are included.

PB83-123828 PC **A19**/MF **A01**
Research Triangle Inst., Research Triangle Park, NC.
Private Market Revitalization: Its Characteristics and Consequences,
Frank F. De Giovanni, Michael D. Connelly, Barrett R. Joyner, and Nancy Ann Paulson. 1981, 442p HUD-0002420
Contract HUD-H-2985-TO1

Three neighborhoods (two revitalizing and one comparison) were selected in each of six cities -- San Francisco, Calif.; Denver, Colo.; Atlanta, Ga.; Cincinnati, Ohio; Philadelphia, Pa.; and Hartford, Conn. -- to determine the characteristics and consequences of private market revitalization. Long - term and in - mover residents in 2 of the 12 revitalizing neighborhoods were also surveyed. Neighobrhood residents studied prior to the start of revitalization were predominantly white, earned less than the city median income, worked in service occupations, and were fairly transient. In - movers who buy their homes have a higher socioeconomic status than the original residents and have similar socioeconomic characteristics to those residents moving to revitalizing neighborhoods. Most in - mover renter households in each neighborhood have very low or low incomes, indicating that the incentive to buy and renovate homes in neighborhoods with a substantial number of renter households exists. Moreover, revitalization does not significantly affect the volume of renovation performed by original owners. Increases in assessed property values produced by revitalization often are not greater than increases in assessed property values produced by inflation in market values in the comparison neighborhoods. No evidence was obtained that properties of original owners were inspected more frequently than other properties after the start of reinvestment. A substantial number of renters may have been displaced because of revitalization. Tables and graphs are included. Appendices present the study methodology, maps, about 65 references, and supporting data. (Author abstract modified).

PB83-123836 PC **A13**/MF **A01**
Research Triangle Inst., Research Triangle Park, NC.
Private Market Revitalization: Its Characteristics and Consequences. Appendixes,
Frank F. De Giovanni. 1981, 296p HUD-0002421
Contract HUD-H-2985-TO1

Appendices to a study on private market revitalization in selected neighborhoods in six cities include a description of data collection procedures, accompanied by tables and sample forms. A description of study sites (San Francisco, Calif., Denver, Colo., Atlanta, Ga., Cincinnati, Ohio, Philadelphia, Pa., and Hartford, Conn.) is presented with numerous tables, maps, and graphs. Also included is a description of sales and renovation activity in the study neighborhoods with extensive tabular data. An in - mover and long - term resident questionnaire is provided along with resident screening form and lead letters to sample households. A table of contents for the field interviewer manual is also appended.

PB83-124008 PC **A04**/MF **A01**
Harvard-MIT Joint Center for Urban Studies, Cambridge, MA.

Housing Cost and Governmental Regulations: Is Regulatory Reform Justified By What We Know,
Gary Hack, and Greg Polk. 08 May 81, 69p HUD-0002443

This report consolidates what is known about the costs that government regulations impose on housing development, drawing upon the large and growing body of published studies on the subject. It also discusses a number of approaches to regulatory reform, raising basic questions which underlie their differences. Finally, it attempts judgments on the forms of regulatory change which appear both feasible and justified by what is now known and points to critical gaps in knowledge that need to be filled. Direct cost effects of regulation are discussed in relation to land supply, zoning, subdivision requirements, development approval and growth management, building codes, and point of sale fees. Indirect effects on housing price inflation are also noted. Issues in regulatory reform focus on whether development regulations are needed at all, the appropriate level of minimum standards, the legitimate costs that first - buyers of homes should assume, and what constitutes a legitimate development process. Six general strategies for changing local development regulations are examined. These include altering the actors, altering the context for local developers, adjusting the incentives for developers, adjusting standards, adjusting the permitting system, and altering consumer expectations. Overall, the findings of recent studies indicate that regulatory reform will not result in large cost savings to homebuyers. Too many additional factors influence both the cost as well as the regulation - reform results. What will ultimately be required is more capital devoted to housing at lower interest rates, changes in consumer expectations, adjustments to the fiscal base of localities, changes to income tax provisions that currently encourage the bidding up of housing prices, and more aggressive State actions to ensure that housing supply matches the need and that the burdens of new development are equitably shared among localities. About 65 references are provided.

PB83-124016 PC **A03/MF A01**
Domestic Regulation and International Competitiveness,
Christopher C. DeMuth. 1981, 43p HUD-0002444

This paper analyzes two views on regulation in the United States. The first holds that the growth of regulation has seriously hindered domestic firms' competition with foreign rivals. The second argues that major economic competitors of the United States, especially Japan and West Germany, are far more successful than the United States in reconciling environmental (and other regulatory) goals with economic performance. A discussion of some general propositions concerning regulation and economic competition in domestic and international markets concludes that the productivity of one nation's economy is not compromised by regulation per se, but only be immoderate regulation. The competitive position of the U.S. economy will not be improved simply by reducing regulation but rather by directing it to the task of improving thekefficiency of all domestic markets. Data indicate that American experience with costly environmental and workplace controls is not radically different from that of major economic competitors. Furthermore, available statistics suggest that regulation has not been a dominant cause of declining U.S. productivity growth. Other factors include major demographic shifts, enormous increases in the relative price of oil, and a substantial decline in the rate of new capital formation. Among business people, the effect of Government regulation on the riskiness of private business decision constitutes the main problem of regulation today. Consensual alternatives to the current adversarial regulation system in the United States are discussed, with attention devoted to Japan's consensual approach, food safety regulation, drug regulation, pollution control standards, the negotiations alternative, and nuclear power plan regulation. It is noted that as business comes to master the techniques of policymaking under the new health, safety, and environmental statutes, the "uncertainty costs" of regulation may greatly diminish. Notes are included.

PB83-124024 PC **A03/MF A01**
Urban Inst., Washington, DC.
Rent Regulation and the Market for Rental Housing Services,
Thomas Thibodeau. Nov 81, 48p HUD-0002445
Contract HUD-H-2882-TO21

This paper examines the causes of rent increases, tenants' motivation for demanding rent regulation, and landlords' response to rent control. Currently, several States have rent control enabling legislation, while many local jurisdictions are regulating rents in response to increases in the cost of providing rental services. The types of rental buildings regulated, the procedures for determining rent increases, and the status of dwellings at vacancy vary dramatically from one jurisdiction to another, as do the costs of administering a rent ordinance. Supporters of rent control argue that rent regulations should be used to keep rents in line with costs and to prevent landlords from earning excessive profits. Rent control opponents argue thatPcontrols accelerate the deterioration of, and increase losses in, the rental housing stock and ultimately harm rather than help tenants. Rent control's impact on the price and quantity of rental housing services depends on the cause of increasing rents and the terms of the rent regulation. Regulations that prohibit all rent increases will have the greatest impact on the quantity of services provided, while regulations that allow annual adjustments will have a smaller impact. The administrative costs of rent regulation are not well documented, so a total picture of the actual costs and benefits of such regulations is difficult to construct. About 50 references are provided. (Author abstract modified).

PB83-124099 PC **A03/MF A01**
Managing Mortgage Interest Rate Risks Through Forward, Futures, and Option Market Hedging,
Glenn W. Clark. 18 May 82, 42p HUD-0002454

This paper discusses types of interest rate risk, intermediation and interest rate risks, traditional interest rate risk management by housing finance intermediaries, organized cash forward contracting, an organized offset options market, and origins of the Government National Mortgage Association (GNMA) futures market. It examines how offset options and futures are used to hedge, the advantages of offset options and futures over cash market hedging techniques, and the current state of market development of offset options and futures markets. Types of interest rate risk include commitment - period risk and portfolio risk, both of which have increased in recent years as the volatility of market interest rates has increased. The existence risks associated with the origination and marketing of mortgages led to the creation of a financial instrument futures market relating to GNMA mortgage - backed pass - through securities and impels the proposed inauguration of GNMA options dealings on organized exchanges. The informal system of dealing in standby and mandatory commitments available from Federal National Mortgage Association and GNMA dealers is less liquid, less well developed, and less reliable than organized offset options and futures markets. Cash forward contracting, particularly cash forward contracting in Government - issued and Government - guaranteed securities (including GNMA's), has fallen into disrepute and has occasioned scandals, notable defaults, and thrift institution bankruptcies because no margin deposits are required in connection with this form of executory contracting. In contrast, the GNMA futures market is mature, liquid, and well functioning. Current policy issues and recommendations are discussed in terms of the relation of the housing finance sector to the Commodity Futures Trading Commission, regulatory constraints on the ability of housing finance institutions to use offset options and futures, and the need to educate mortgage investors about the potential benefits and mechanics of futures trading. One chart and 16 notes are provided.

PB83-124107 PC **A03/MF A01**
Report to the Taxation Task Force of the President's Commission on Housing on Financial Reporting for Sales of Below Market Rate Mortgages,
Fredric E. Weldon. Jan 82, 45p HUD-0002455

This paper addresses the issue of financial reporting for savings and loan (S&L) performance, specifically dealing with sale of mortgage assets. The purpose of considering this topic is to reap such benefits as are available from improved public confidence and increased management flexibility concerning asset restructure. A basic factor to consider is the extent to which sales of below market rate mortgages can contribute to increased profit and stronger net worth positions. The alternative accounting procedures presented in this paper (the purchase accounting and deferral - of - loss methods) are designed to promote such sales and restructure. The paper looks at the thrift industry conditions today and analyzes the economic benefits of sale and reinvestment from the perspective of the S&L. Currently accepted accounting treatment for sales of mortgages are examined and two alternatives for reporting such transactions are presented. The effect of each on the income statement and balance sheet of the selling institution is analyzed. Issues affecting insolvency are discussed. In addition, the advantages and disadvantages of the alternative procedures are examined, the theoretical basis for each is developed, and the potential for misrepresentation and inaccurate financial reporting is explored. Finally, recommendations are presented for task force consideration. (Author abstract modified).

PB83-124131 PC **A02/MF A01**
Evaluation of Tax-Exempt Financing for Housing,
A. Thomas King. Jan 82, 17p HUD-0002458

Use of tax - exempt bonds to finance housing raises several important questions: (1) what is the relationship of the tax - exempt to the taxable bond rate, and how will this change as the relative volume of tax - exempt bonds increases; (2) how much revenue will be lost by the U.S. Treasury because of the bonds; and (3) what will mortgage revenue bonds (MRB's) accomplish for housing and special population groups. This report deals with these issues, examining studies by Peterson and Peterson, Tuccillo, and Weicher and opposing works by Kormendi and Nagel. Although evidence is not definitive, several conclusions can be made. For example, the effect of issuing $1 billion of MRB's is to increase the tax - exempt rate by perhaps 4 - 7 basis points. The revenue loss per $1 billion of MRB's is probably $20 - 25 million. An indirect housing subsidy because it gives high income taxpayers a windfall gain. But taking into account the costs of administering a direct subsidy, it may not be less efficient. A major, unlimited program of mortgage subsidies through MRB's would cause inefficient resource allocation by diverting too many scarce resources into housing and away from productive investments in industry. Limited MRB programs do not cause serious allocation inefficiencies because they do not increase the total availability of funds very much. Each $1 billion of MRB funds increases total mortgage funds by only $150 - 200 million. MRB programs do, however, create inequities between equally deserving citizens. Notes and five references are provided. (Author abstract modified).

PB83-124164 PC **A15/MF A01**
RAND Corp., Santa Monica, CA.
Revenue and Expense Accounts for Rental Properties. Housing Assistance Supply Experiment,
Kevin Neels. Mar 82, 328p N-1704-HUD, HUD-0002465
Contract HUD-H-1789

This report presents financial data collected in annual interviews with property owners and occupants as part of the Housing Assistance Supply Experiment. The bulk of the report consists of detailed accounts of the annual revenues and expenses for the two marketwide samples of rental properties: Brown County, Wis., covering the years 1974 to 1977. The data are organized into comprehensive financial accounts for individual properties and weighted and summarized for four stratifications of regular rental properties in each of four consecutive years in two metropolitan housing markets, for a total of 32 sets of accounts. Each set is presented in a series of eight tables; the set is completed by a ninth table describing the subsamples represented by the accounts. The revenue and expense records for individual properties include both cash and noncash items, capital as well as current account items, and expenses paid directly by tenants as well as by landlords. Because of those features, the accounts are analytically comparable across a wide variety of property types and landlord - tenant arrangements. Comparable data are presented for properties stratified by size, age of structure, form of ownership, and location within the site. Most of the financial data were directly reported by property owners or their tenants. Some were taken from public records, and some were imputed using collateral information obtained from survey respondents. A bibliography of 34 entries is provided. (Author abstract modified).

PB83-124172 PC **A03**/MF **A01**
RAND Corp., Santa Monica, CA.
Specification Bias in Housing Production Functions. Housing Assistance Supply Experiment,
Kevin Neels. May 82, 42p N-1744-HUD, HUD-0002466
Contract HUD-H-1789

This study examines the effects of some of the more common forms of simplification assumed in analysis of the production function for housing. For reasons of analytical convenience and / or lack of data, researchers investigating the production function for housing services have rarely taken a comprehensive view of the production function. Instead they have usually focused on land and capital and ignored current inputs, or used inputs that were highly aggregated, such as land and nonland. To establish a standard, a translog production function was fit to data drawn from the Housing Assistance Supply Experiment, taking land, capital, energy, and other current inputs as its factors. The effects of aggregating or omitting factors of production and adopting more restrictive functional forms were then considered. Results indicate that measurement of the first order effects in the production function is relatively insensitive to the way inputs are aggregated or to the use of restrictive functional forms. Omitting factors of production such as energy and other current inputs reduces the function's degree of homogeneity and overstates the importance of land. The second order effects in the production function appear to be less stable. All forms of specification error have the effect of pushing the estimated elasticities of substitution closer to one. (Author abstract modified).

PB83-124214 PC **A02**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Urban Rehabilitation and Community Reinvestment.
Federal Home Administration (FHA) Title 1 Property Improvement Loan Insurance: A Guide for Financial Institutions and Public Rehabilitation Officials,
Michael Ehrmann. Dec 78, 21p HUD/CPD-498/1(2), HUD-0002473

This guidebook explains the operations of the Title I program. It describes the way Title I insurance is being used with Community Development Block Grants (CDBG) funds to make home improvement loans affordable for lower income property owners. Advantages for lending institutions, for public agencies, and for property owners are noted. Title I is oriented toward conventional lending practices of the private sector more than any other Federal housing program. Loan processing and credit determination are done by the participating financial institutions, and lenders are encouraged to use their normal credit standards in making decisions on individual loans. The lending institutions originate and service Title I loans from their own funds and collect all payments. HUD's role is to provide insurance premium amounting to one - half percent of the net proceeds of each loan, the Federal Government will pay 90 percent of any losses due to defaults. Key program regulations are delineated for eligible lenders, loan borrowers, eligible borrowers, loan terms, eligible improvements, ineligible improvements, insurance coverage and charges, and claims for losses. Information needed for participation in the Title I program is given, and use of Title I in community development and rehabilitation programs is explained. Basically, Title I offers financial institutions and public officials a valuable resource in their efforts to upgrade the quality of properties in declining urban neighborhoods. Copies of the lenders' contract of insurance application and the individual borrower's application are appended.

PB83-124222 PC **A03**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Urban Rehabilitation and Community Reinvestment.
Federal Housing Administration (FHA) Title I Property Improvement Loans in Public Rehabilitation Programs: Case Studies,
Michael Ehrmann, Patricia Marshall, and Peter Richardson. Mar 79, 35p HUD/CPD-498/2(2), HUD-0002474

Second in a series designed to promote the use of Title I Property Improvement Loan Insurance as a tool in Community Development Block Grant (CDBG) rehabilitation, this guide offers a detailed study of the use of Title I by local governments, lenders, and State housing finance agencies in six rehabilitation programs. Title I relies on private sector lending procedures more than any other Federal housing program. Participating financial institutions make all loan determinations using conventional credit standards, and HUD provides insurance against defaults. The cost of the insurance coverage is one - half percent of the face value of the loan. In return, the Federal Government establishes an insurance reserve for participating Title I lenders and pays 90 percent of each defaulted loan. A maximum of 12 percent is charged, 15 years is the maximum time allowed to repay the loan, and a maximum loan for one - to - two - unit residential or commercial structures is $15,000. Properties with two or more units have an upper limit of $25,000. Loans may be used to finance alterations, repairs, and improvements on existing structures only for work that will be a permanent part of the real estate. Three case studies described use some form of leveraging along with the Federal Housing Administration (FHA) Title I insurance program: Hoboken, N.J., Municipal Home Improvement Program; Westchester County, N.Y., CDBG Rehabilitation Programs; and Security Pacific National Bank, Los Angeles, Calif., Property Improvement Program for Community Development. Three programs described use tax - exempt bond financing: Minnesota Housing Finance Agency Home Improvement Loan Program, New Jersey Mortgage Finance Agency Home Improvement Loan Program, and Pittsburgh Urban Redevelopment Authority Home Improvement Loan Program. Notes and tables are included. A list of contact persons and related information are appended.

PB83-124230 PC **A03**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Urban Rehabilitation and Community Reinvestment.
Financial Leveraging in Community Development Rehabilitation: A Technical Assistance Guide,
Michael Ehrmann, and Peter Richardson. Jul 79, 47p HUD/CPD-530(2), HUD-0002475

This guide is designed to assist local government officials interested in leveraging public dollars with private resources in the financing of home improvements. It includes a summary of basic approaches to leveraging, a review of the lending institutions which may become involved, and an analysis of commonly used lending tools. Finally, the guide offers specific suggestions on preparing for and negotiating leveraging agreements. Leveraging combines public dollars with private dollars to create a pool of funds for rehabilitation loans at below - market interest rates. Community Development Block Grant (CDBG) funds are used as a "level" to involve private resources in public rehabilitation programs. Amoritized rehabilitation loans, which require regular repayment schedules, are the target of leveraging techniques. A "leverage loan" can provide desired interest rates to private lenders while public funds reduce the cost of the loan to borrowers. Leveraging can increase the lending capacity of local programs because private dollars become involved and because public funds can be disbursed at their "present value." Basic approaches to leveraging are (1) the use of CDBG funds as a direct subsidy of individual loans to lower the effective interest rate or defray part of the repair cost and (2) the use of CDBG funds as a deposit with a lender to increase private investments on terms consistent with the goals of public agencies. Lending institutions that may become involved in leveraging include commercial banks, savings banks, savings and loan associations, credit unions, and life insurance companies. Lending tools available to these institutions include property improvement loans, mortgages, and business loans. Notes and tables are included.

PB83-124248 PC **A19**/MF **A01**
Rutgers - The State Univ., New Brunswick, NJ. Center for Urban Policy Research.
Housing Costs and Government Regulations: Confronting the Regulatory Maze,
Stephen R. Seidel. 1978, 445p HUD-0002477

This report analyzes the extent to which government regulations are responsible for the recent rapid inflation in new housing prices. Seven areas of regulation are examined: building and energy - conservation codes, subdivision requirements, zoning, growth, and environmental controls, and financing regulations. Within each of these areas, attention is paid to the types of requirements now in use and ways in which their cost impacts can be minimized. The study points to the areas in which government intervention is needed and also to those where it is counterproductive by driving up the cost of housing and depriving citizens of reasonable access to affordable homes. Report findings were based on surveys conducted of 300 public agency officials; i.e., in building departments of 100 municipalities. A nationwide questionnaire of land developers and homebuilders was returned by 2,500 respondents. The study found that the cost increases resulting from government regulation were in some cases caused by administrative inefficiencies and the misuse of power. The building code administrative process, for example, appears overly cumbersome, with local officials having too much discretion in decisions beyond their technical expertise. Furthermore, no justification was found for the existence of thousands of diverse local codes. If reduced energy consumption is to be achieved, some form of financial incentive is recommended for housing consumers. Subdivision improvement requirements are faulted for unnecessarily increasing costs without bearing significant relationship to minimum health and safety safeguards. These requirements are increasingly shifting public costs to the developers. Zoning regulations, such as the exclusion of mobile homes, have severely limited affordable housing options. Growth control restricts the amount of developable land, drives up the price of permissible lots, and shifts the growth burden to neighboring communities. Environmental impact review, as currently practiced, is ineffective and unrelated to general planning. Recommendations are made for overcoming these and other deficiencies. Tabular data and chapter notes are given. Appendices contain texts and other data on the regulations. Approximately 200 references are supplied.

PB83-124263 PC **A02**/MF **A01**
Bedford Stuyvesant Restoration Corp., New York.
Establishment of Pathmark Supermarket in Bedford Stuyvesant, New York: Case History.
Aug 79, 16p HUD-0002503

The case history reviews the role of the Bedford Stuyvesant Restoration Corporation (New York) in pursuading the Pathmark Division of Supermarkets General Corporation to establish a Pathmark supermarket outlet in the Bedford Stuyvesant community. The project began in 1974, when Restoration initiated discussion with Supermarkets General, and culminated in opening of the store in 1979. The project represents a business arrangement, in which a community group and a business organization joined as partners to own and operate the supermarket. It illustrates economic development opportunities which are possible through creative, business - community joint ventures. The project's implementation plans (site location, leasing arrangements, personnel selection) are detailed, with attention to the joint nature of the project. The distribution of financial and operational risks between the two groups is discussed. No references are cited. (Author abstract modified).

PB83-124271 PC **A06**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Evaluation.
Urban Development Action Grant Program: First Annual Report.
Jun 79, 123p HUD/CPD-454, HUD-0002567

The Action Grant program, authorized in 1977 for a 3 - year period, was designed to encourage joint public - private ventures to combat local economic and physical distress. This report reviews the progress made through the first fiscal year of the program in achieving that goal. HUD announced 236 Action Grant award during fiscal 1978 – 131 for metropolitan cities and 105 for small cities. The project types were relatively balanced: 36 percent industrial, 35.6 percent commercial, and 28.4 percent neighborhood projects. About $2.9 billion in private investment will be leveraged by the grants awarded in 1978, with commercial projects attracting commitments for 46.4 percent of this amount. Over 211,653 jobs are projected to be created, with 87,061 reported as new permanent jobs, and over 15,000 housing units are estimated to be constructed and 11,503 rehabilitated. The Action Grant program has provided the impetus needed to move projects from the planning stage into successful development and execution. The projects are attracting additional private investment subsequent to the award of Federal funds. Nearly one - half on all housing construction underway is for low - income and moderate - income persons. An index of approved projects and comments on data sources and methods

are appended. Tables and footnotes are supplied. (Author abstract modified).

PB83-125393 PC **A04/MF A01**
Utah State Univ., Logan.
Survey Analysis of the Impact of Conservation and Solar Tax Credits.
Final rept.,
H. Craig Petersen. 15 Jul 82, 74p NSF/PRA-82029

Results are presented of a survey on residential solar and energy conservation attitudes and practices. The survey was sent to households in ten Western states and in Pennsylvania. About 18 percent of those in the West and 15 percent of those in Pennsylvania were unaware of the existence of Federal tax credits for solar and conservation expenditures. The percentage who indicated that they were aware and who made a claim on their 1978, 1979, or 1980 income taxes was 15.5 percent in the Western states and 29.3 percent in Pennsylvania. The procedures involved in data collection, data preparation, sample selection, and statistical analysis are reviewed. A copy of the survey questionnaire is included as are reviewer comments.

PB83-125427 MF **A01**
Department of Commerce, Washington, DC.
Business America - The Magazine of International Trade, Volume 5, Number 20, October 4, 1982.
Biweekly pub.
4 Oct 82, 40p
See also Volume 5, Number 19, PB83-108209.
Paper copy available from Supt. of Docs.

Contents:
Spotlighting the new South Pacific;
Eximbank introduces new export credit facility;
DECs discuss trade at Washington meeting;
New conditions face exporters to Mexico;
Business outlook abroad;
Worldwide business opportunities.

PB83-125435 MF **A01**
Department of Commerce, Washington, DC.
Business America - The Magazine of International Trade, Volume 5, Number 22, November 1, 1982.
Biweekly pub.
1 Nov 82, 47p
Paper copy available from Supt. of Docs.

Contents:
Service industries move into trade spotlight;
Hudson Institute releases report on Japan;
A photo gallery of 'E' award honorees;
Business outlook abroad;
Worldwide business opportunities.

PB83-125708 PC **A03/MF A01**
Economic Research Service, Washington, DC. National Economics Div.
Household Expenditure Patterns in the United States.
Technical bulletin,
Larry E. Salathe. Apr 79, 28p TB-1603

Purchases of 'away-from-home' food--such as in a restaurant--rise faster than 'at-home' food purchases as household income rises. But, increases in household size cause away-from-home food purchases to decline while at-home food purchases increase. Expenditure elasticities, measuring these effects, are estimated for 109 food and 8 nonfood categories. Households allocate a greater share of their at-home food dollar to bakery products, beef and veal, and fruits and vegetables as income increases. Study is based on data from Bureau of Labor Statistics 1972-73 Consumer Expenditure Diary Survey.

PB83-127720 PC **A10/MF A01**
Center for Community Economics, Santa Rosa, CA.
Design of an Outreach and Delivery System of SBA Programs for Veterans.
Final rept.,
James E. Pechin. 3 Oct 80, 220p
Contract SBA-4869-ADA/P-80
Portions of this document are not fully legible.

The report is a design of an outreach and delivery system which will enable SBA to improve the quantity and quality of its services offered to veterans - especially Vietnam veterans. This project includes: (1) conducting interviews with SBA officials to analyze the appropriateness of its programs for veterans; (2) analyzing procurement programs of other agencies as to the appropriateness for veterans; (3) preparing a brochure indicating SBA programs offering services to veterans; (4) designing an inhouse training package for veterans' affairs officers, including a video-taped discussion about veterans; and (5) developing an information exchange between the Veterans Administration and SBA that will assist veterans.

PB83-854513 PC **N01/MF N01**
National Technical Information Service, Springfield, VA.
Interstate Commerce. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 93p
Supersedes PB81-855850.

This bibliography contains citations concerning interstate commerce regulations, legalities, and operations. Common carriers and public policy, motor carrier regulatory reform, antitrust impact on motor carriers, trucking deregulation, shippers associations, and grants of motor contract carrier operating authority during 1970 through 1975 are presented. The impact of multiple unit fleet owners, interstate rail carrier regulations, and the competitive effects of interstate commerce and banking are also discussed. (This updated bibliography contains 68 citations, 17 of which are new entries to the previous edition.)

PB83-854570 PC **N01/MF N01**
National Technical Information Service, Springfield, VA.
Life Insurance Industry. 1974-November, 1982 (Citations from the Management Contents Data Base).
Rept. for 1974-Nov 82.
Nov 82, 152p

This bibliography contains citations concering life insurance and the life insurance industry. Whole life, term, and term conversion policies are discussed. The effect of the economy on the industry is considered, and the strategies for mergers are included. (Contains 218 citations fully indexed and including a title list.)

PIRA-83/01 PC**$135.00**
Pira, Leatherhead (England).
Statistical Review of Packaging 1977-1981 Update United Kingdom,
Rowena Mills. Jul 82, 77p

Statistical data related to sales, material analyses, price movements and end-uses, are essential background knowledge for both packaging manufacturer and package user. Without such data those involved in the manufacture, marketing and utilization of packaging materials are unable to assess the manner in which the market is developing, the extent to which the specific materials are altering their share of the market, the movement in price differentials, and the reasons for these trends. Pira has published regularly over the years a Statistical and Economic Review of UK Packaging. This study is one of the update projects which provides data for 1977-1981. The figures in the tables in this update follow the pattern of, and revise, those in the previous full review which covered 1976-1980.

5D. History, Law, and Political Science

AD-A120 571/5 MF **A01**
Air Force Academy, CO.
The American Military and the Far East, Proceedings of the Ninth Military History Symposium, United States Air Force Academy, 1-3 October 1980,
Joe C. Dixon. Oct 80, 332p
Availability: Superintendent of Documents, GPO, Washington, DC 20402 HC $7.00. Microfiche furnished to DTIC (and NTIS) users.

Professors Dingman and Graebner highlight part one with a couplet of major papers on the creation and evolution of an American commitment in East Asia from 1898 to 1960. The second collection of papers provides a look at American pacification and occupation activities in three important areas: the Philippines, 1898-1902; Japan, 1945-1952; and Vietnam, 1956-1960. The third and fourth parts of this volume address two sides of the same question: What impact did the American military and Asian societies have on one another. Part three features papers by active duty and retired military officers, all trained as historians, who examine the impact of the Asian experience on the organizational structure, strategy and tactics, and doctrine of the components of the American military. The fourth part of this volume examines the impact of the American military on elements of three Asian societies: China, Japan, and Korea. In the last part of this volume, Professoors Ropp and Coox offer stimulating reflections upon the American military and East Asia.

AD-A120 706/7 PC **A03/MF A01**
RAND Corp., Santa Monica, CA.
The Potential for Conflict Between Soviet and Cuban Policies in the Third World,
Rose E. Gottemoeller. Aug 81, 31p RAND/P-6668, SBI-AD-E750 320

The Soviet Union and Cuba have stirred up considerable controversy by their participation in the confusing national liberation struggles of the Third World. Analysts in the West have puzzled over the exact nature of the relationship between the two countries, for in places like Angola and Ethiopia, it has appeared that Cuba is providing the muscle and firepower, while the USSR is providing the money and brainpower. One of the commonest explanations is that the Cubans are playing a simple surrogate role in the Third World, repaying their large economic debt to the Soviet Union by taking orders from that superpower in its bid for influence among the developing countries. However, other have argued quite convincingly that Cuba is not performing as a Soviet proxy, in Africa or elsewhere. This paper will first discuss the evolution of the current relationship between the USSR and Castro's Cuba, highlighting areas where different approaches to a problem have resulted in policy conflict or independent action. Next, the paper will cover possible areas where conflict could develop out of present Soviet-Cuban cooperation in the Third World. These speculations will reflect past differences in behavior, as discussed in the first section. Finally, the paper will conclude with some ideas concerning the essential nature of the Soviet-Cuban allied relationship, including consideration of the influence to be gained by smaller nations in their dealings with the great powers.

PB83-118349 PC **A05/MF A01**
National Research Council, Washington, DC.
Modernization of the Public Land Survey System.
1982, 84p
Sponsored in part by Department of the Interior, Washington, DC.

The report encourages the modernization of The Public Land Survey System for use in mapping and densification of geodetic control primarily for land information systems and the multiple Cadastre.

PB83-125229 PC **A05/MF A01**
Clemson Univ., SC. Water Resources Research Inst.
An Economic Evaluation of Citizen Suits.
Technical rept.,
Hugh H. Macaulay, and Chalmers W. Van Deusen.
Aug 81, 83p WRRI-94, W83-00619, OWRT-B-104-SC(1)
Contract DI-14-34-0001-7185

Water pollution problems can be analyzed in economic terms as scarcity of an asset whose use is sought by many. Some groups, however, have not enjoyed as much of their preferred use of water quality as they would like at the effective zero price, and have reported to litigation. Courts traditionally have not granted standing to prospective litigants unless the latter could show damage resulting from illegal action by another party. Those seeking their preferred uses through the courts have generally desired environmental purity. Further, by allowing suits based on damage, the courts have, in effect, created new property rights, but decisions in most of these cases have reflected political rather than economic considerations.

PB83-125575 PC **A04/MF A01**
General Accounting Office, Washington, DC. Resources Community Economic Div.
Interior's Program to Review Withdrawn Federal Lands--Limited Progress and Results.
7 Oct 82, 71p GAO/RCED-83-26, B-208997

In 1976, the Congress required the Secretary of the Interior to review, by 1991, certain types of Federal

lands withdrawn (set aside) by various Federal agencies in 11 Western States. Special emphasis was placed on the review of Federal land withdrawals from mineral exploration and development. However, the Bureau of Land Management is giving priority review to lands not withdrawn from mineral exploration and development and not specified for review by the Congress. GAO believes that Congress' objectives could have been more fully met if congressional priorities were followed and program resources allocated proportionately to those States with the most withdrawn acreage needing review and the best potential for mineral development. GAO also believes that the program's successful completion may be jeopardized by funding and support problems. In addition, GAO found that Interior has not defined the extent to which Federal lands are informally ('de facto') withdrawn nor established criteria for land managers to use when making decisions which limit access to lands for mineral exploration and development. GAO makes recommendations addressing these problems.

5E. Human Factors Engineering

PB83-118943 PC **A04**/MF **A01**
Transportation Research Board, Washington, DC.
Visibility and Operational Effects of Geometrics,
Donald A. Gordon, D. M. Finch, Richard E. Stark, A. Ketvirtis, and Eugene I. Farber. 1982, 61p TRB/TRR-855, ISBN-0-309-03359-4
Library of Congress catalog card no. 82-18872. Also pub. in ISSN-0361-1981.
Paper copy also available from Transportation Research Board, 2101 Constitution Ave., NW, Washington, DC. 20418.

The 9 papers in this report deal with the following areas: legibility of highway guide signs; roadway visibility using minimum energy; radio control of highway lighting; programmable roadway lighting system as an integral traffic management component; driver eye-height trends and sight distance on vertical curves; shoulder upgrading alternatives to improve operational characteristics of two-lane highways; before-after accident analysis for two shoulder upgrading alternatives; guidelines for treatment of right-turn movements on rural roads; and, motorist response to selected driveway systems.

5F. Humanities

PB83-119990 PC **A05**/MF **A01**
Arizona State Museum, Tucson. Cultural Resource Management Div.
Hohokam Archaeology Along the Salt-Gila Aqueduct Central Arizona Project. Volume II: Supplemental Archaeological Survey,
Lynn S. Teague, Patricia L. Crown, Carol McCarthy, Earl Sires, and James Gibb. 1982, 88p ASM/ARCHAEOLOGICAL SER-150, DI-BR-APD-CCRS-82-6
Contract DI-0-07-32-V0101
See also Volume 1, PB82-218728. Prepared in cooperation with Harvard Univ., Cambridge, MA. Peabody Museum.

This is the second volume in the series of reports on archaeology conducted for the United States Bureau of Reclamation along the route of the Salt-Gila Aqueduct, a component of the Central Arizona Project designed to transport water a distance of 58 miles from east of Phoenix to the vicinity of the Picacho Mountains in Arizona. This project, is largely concerned with data recovery at sites identified during previous surveys of the aqueduct alignment. However, as actual construction of the aqueduct began, various realignments and ancillary features became necessary. This volume reports the results of intensive archaeological surveys of these areas in which construction was proposed only late in the planning process.

5H. Man-Machine Relations

N82-34037/3 PC **A99**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
Sixteenth Annual Conference on Manual Control.
Jul 82, 647p NAS 1.15:84273, A-9000, NASA-TM-84273
Prepared in Cooperation with MIT, Cambridge. Conf. Held in Cambridge, Mass., 5-7 May 1980.

No abstract available.

PB83-855171 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Plasma Display Panels. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 118p
Supersedes PB82-861055.

This bibliography contains citations concerning the design, development, and performance of various types of plasma display panels. Interactive techniques and utilization of plasma display systems for a wide variety of applications ranging from large area displays to aircraft cockpit displays, are considered. (This updated bibliography contains 96 citations, 13 of which are new entries to the previous edition.)

5I. Personnel Selection, Training, and Evaluation

AD-A120 409/8 PC **A03**/MF **A01**
Center for Naval Analyses, Alexandria, VA. Naval Studies Group.
Advances in the Measurement of Personnel Productivity,
Alan J. Marcus, Aline O. Quester, Jean W. Fletcher, Michael S. Nakada, and William M. Evanco. Jun 82, 30p Rept no. CRC-466
Contract N00014-76-C-0001

Determination of trade-offs between personnel with different characteristics is vital to attaining a high ratio of personnel productivity to costs. Personnel trade-offs are evaluated using unit performance, individual performance, and survey data as measures of productivity. For each approach, previous work is briefly reviewed, then models for improving productivity measurement are presented. Broad-based proposals are made for advancing personnel productivity measurement in the Navy.

AD-A120 802/4 PC **A02**/MF **A01**
Houston Univ., TX. Dept. of Psychology.
Reduction in Force: Organizational and Individual Issues.
Technical rept.,
Richard D. Arvey, and Steven D. Jones. Oct 82, 25p
Rept no. TR-3-ONR
Contract N00014-80-C-0541

This manuscript reviews a number of issues associated with the events occurring when organizations reduce the number of employees in their work force. Management and psychological literature are reviewed with respect to the criteria used for deciding who to terminate, how should the termination process be managed, the psychological impact on the individuals terminated, and the potential impact of outplacement services. Attention is drawn to the scant amount of research available to guide management and psychologists dealing with this very real process. (Author)

ED-202 483 Not available NTIS
Association of Research Libraries, Washington, DC.
Education for the Research Library Professional. Minutes of the Ninety-Seventh Meeting, October 15-16, 1980 in Arlington, Virginia.
Oct 80, 108p
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210. Also available from Association of Research Libraries, 1527 New Hampshire Avenue, N.W., Washington, DC 20036 ($5.00/issue for members; $7.50/issue for non-members).

These proceedings of the Association of Research Libraries (ARL) meeting on the education of research library personnel contain the following papers: The Conant Report and Its Implications for Academic and Research Libraries, by Ralph W. Conant; Library Education--State-of-the-Art, by Robert O. Stueart; Professional Education and Training--A New CLR Program, by Warren J. Haas; and Library Education--The Director's Point of View, by Margot B. McBurney. Discussion and comments from the floor follow the papers. Details of the business meeting are provided, and appendices include various ARL committee reports and membership data.

ED-203 844 Not available NTIS
United Nations Educational, Scientific and Cultural Organization, Paris (France).
Planning Information Manpower,
P. Havard-Williams, and E. G. Franz. 2 Feb 76, 73p COM-74/NATIS/REF.5
For a related document, see IR 009 360.
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

These two papers, one on information and library science personnel, the other on archival personnel, argue that trained professionals are the key to modern information processing, and discuss the needs of developing nations for information about training and education agencies, international exchanges of personnel, and for internationally recognized standards. They also describe the current state of manpower resources, personnel structures, and existing education and training, and make recommendations on core curricula, programs and facilities, and personnel recruitment and qualifications. Tables and appendices display the personnel structures and curricula, and there is a list of general recommendations developed at a 1974 meeting of archivists, librarians, and documentalists. Two bibliographies provide 23 and 24 references respectively.

HRP-0904398/5 PC **A07**/MF **A01**
Bureau of Health Professions, Hyattsville, MD. Div. of Associated Health Professions.
Proceedings: Workshop on Preparation for Practice in Public in Public Health, May 27, 1981.
Mar 82, 128p
Contract PHS-HRA-232-81-0004

Effective use of the nation's limited supply of public health personnel requires a clear understanding of the current health problems facing the country as a whole and a keen appreciation of how the various specialists within this field contribute--through their unique training and experience--to the solution of these problems. This, coupled with the prospects for significant alteration in the public health responsibilities of Federal, State, and local jurisdictions, underscores the need for periodic reassessments of the quality, relevance, and types of training provided individuals entering into or already employed in the public health work force. In response to this, a Workshop on Preparation for Practice in Public Health--bringing educators together with employers and practitioners representing all levels of government--was convened in Rockville, Maryland, during May 27-29, 1981. Its objective was to produce position papers and recommendations that would help chart future directions for public health training. Full-time, degree-oriented education for public health personnel, further training for those already employed, and the needs of other types of health professionals who become involved in public health activities were considered in the context of the requirements of employers.

HRP-0904399/3 PC **A07**/MF **A01**
Bureau of Health Professions, Hyattsville, MD. Div. of Associated Health Professions.
Proceedings: Workshop on Preparation for Practice in Environmental Health, July 14, 1981.
Mar 82, 128p
Contract PHS-HRA-232-81-0004

Concerns over the deleterious effects of biological, chemical, and physical insults to human health, disseminated through the environmental contacts, are well founded. Continuous vigilance is required to contain the biological agents of infectious diseases. Safe management and disposal of physical agents which constitute the major etiologic factors in seven of the ten leading causes of death and disability, is a growing challenge. Exposure even at relatively low levels to

toxic chemicals and physical agents such as radiation, particulate dusts and fibers, and noise, are implicated in the appearance of genetic abnormalities, behavioral impairments, chronic degenerative conditions, and some cancers and heart diseases among other health problems. The workshop on Preparation for Practice in Environmental Health - involving educators, practitioners and representatives of all levels of government - was convened in Rockville, Maryland, during July 14-16, 1981, to explore these issues. Its objective was to produce position papers including recommendations to assist in charting future directions for environmental health training. It considered issues related to full-time graduate training, full-time undergraduate training, and training for practicing environmental health professionals.

PB83-109009 PC **A07/MF A01**
Social Security Administration, Birmingham, AL. Office of the Director of Management.
Time and Attendance System-User's Manual.
Sep 76, 130p FSWEC-77/0102A
For system on magnetic tape, see PB83-109017.

This system maintains a master file of current work and leave data, and produces reports for one or more pay periods reflecting an individual's regular, overtime, etc., hours worked along with annual, sick, etc., hours absent. Similar reports are produced by timekeeper and pay period with summaries by individual, timekeeper number, and pay period. Special request runs can be made for information related to specific employees, timekeeper or pay period. Other special reports are also available. The system is parameter card driven and very flexible as to the type of report that may be generated.

PB83-109017 CP **T05**
Social Security Administration, Birmingham, Ala. Programming Group.
Time and Attendance System.
Software.
7 Sep 76, mag tape SW-PER800, FSWEC-77/0102
Price includes documentation. Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This system maintains a master file of current work and leave data, and produces reports for one or more pay periods reflecting an individual's regular, overtime, etc., hours worked along with annual, sick, etc., hours absent. Similar reports are produced by timekeeper and pay period with summaries by individual, timekeeper number, and pay period. Special request runs can be made for information related to specific employees, timekeeper or pay period. Other special reports are also available. The system is parameter card driven and very flexible as to the type of report that may be generated. ...Software Description: The system is written in the COBOL programming language for implementation on a UNIVAC Spectra-70 computer using the Spectra-70, vers. 32K, operating system. The computer memory requirement is 16K.

PB83-116665 PC **A04/MF A01**
Office of Human Development, Washington, DC.
Guia de Bolsillo para Ninera (A Pocket Guide to Babysitting).
1975, 61p DHEW/PUB/OHD-76-30011
Text in Spanish.

The report details responsibilities of babysitting and provides other kinds of information needed by babysitters, whether experienced or just beginning.

PB83-116863 PC **A06/MF A01**
Veterans Administration, Washington, DC.
Medical Care of the Veteran in the United States 1870-1960: A Bibliography,
Rosemary Dolan, and Muriel McKenna. Mar 63, 111p VA/63-6181

The bibliography covers all phases of the medical and hospital program of the Veterans Administration and its predecessor agencies. References on hospital locations, planning and construction, and special services within hospitals are included, together with references on the activities of the various divisions of the Department of Medicine and Surgery. References to literature earlier than 1918 are few, since prior to World War I disability compensation rather than treatment and hospitalization was provided for American veterans.

PB83-117168 PC **A04**
Georgia Fire Academy and Minimum Standards Office, Atlanta.
Statewide Organizational Design for Fire Education and Training in Georgia.
Final rept.,
Harold Thompson. 31 Jan 77, 67p
Contract NFPCA-76030
Sponsored in part by Department of Commerce, Washington, DC.

This study was conducted on the basis of a systems philosophy, an approach which recognizes that the Fire Prevention and Control System of the State of Georgia can be more effective than its sub-system of fire education and training. This study has attempted to develop through systems analysis such a fire education and training organizational design for Georgia.

PB83-118356 PC **A07/MF A01**
Federal Emergency Management Agency, Washington, DC.
Public Fire Education Resource Catalog,
Pam Powell. Oct 82, 137p FEMA-23

The Public Education Resource Catalog is designed for Public Fire Educators to provide a compilation of available reference documents pertaining to the fire problem.

PB83-118679 PC **A07/MF A01**
National Research Council, Washington, DC.
Science, Engineering, and Humanities Doctorates in the United States: 1981 Profile.
1982, 132p
Sponsored in part by the National Science Foundation, Washington, DC., National Endowment for the Humanities, Washington, DC., National Institutes of Health, Bethesda, MD., and Department of Energy, Washington, DC.

The National Research Council (NRC) has long been concerned with the supply and utilization of scientists and engineers. The Survey of Doctorate Recipients (SDR), a biennial survey, was designed to answer questions related to supply, and to provide information on both the demographic characteristics and the current employment status of Ph.D.s in the United States. The SDR is a longitudinal survey which includes Ph.D.s in the sciences, engineering, and humanities who have earned their degrees between 1930 and the present. This 1981 report is based on the results of the fifth biennial survey (the third to include Ph.D.s in the humanities). The report focuses primarily on the demographic characteristics and employment status of recipients of Ph.D.s granted from January 1938 to June 1980 who were residing in the United States in February 1981.

PB83-120360 PC **A04/MF A01**
Millersville State Coll., PA. Training Resources in Permanent Planning Project.
Trainer's Manual for Goal Planning and Permanency Planning in Children and Youth Services,
Martha L. Jones, and John L. Biesecker. c1979, 60p
Grant PHS-90-C-1444

There are three sections to the Trainer's Manual. Section 1 is a brief overview of learning theory, specifically, including a discussion of how adults learn. This is followed by guides for the trainer in how to set up a workshop, group exercises which can enhance training, and key elements for a successful workshop. Section 11 is related to the Permanency Planning Guide and presents an overview of the possible uses and limitations of the Guide as a tool for training, consultation, and supervision in children and youth agencies. Section 111 deals specifically with the goal planning training, including format, suggested group size and guidelines for discussion topics and group exercises. This section is designed to provide the trainer with step-by-step instructions for conducting training in goal planning. (Copyright (c) Jones and Biesecker, 1979.)

PB83-122697 PC **A06/MF A01**
Texas Transportation Inst., College Station.
Analysis of Driver Instructor Factors.
Final rept. Dec 79-Mar 82,
R. J. Koppa. Jul 82, 119p DOT-HS-806 249
Contract DOT-HS-9-02077

This report documents the procedures and findings of a preliminary study of biographical, demographical, and professional background factors of instructors in driver education. A number of driver education programs in Texas were visited by researchers armed with structured interview and observational procedures, and those programs were captured in a cross-sectional set of data. Student scores on an especially designed knowledge test were gathered, and these students were tracked for twelve months through their driver records with the Texas Department of Public Safety. Sixty-one instructors and nearly 1300 students formed the basis for the study. The study also featured an extensive literature survey, the results of which are documented in this report.

PB83-122846 PC **A02/MF A01**
General Accounting Office, Washington, DC. Federal Personnel and Compensation Div.
Special Pay and Benefits Granted to Select Groups of General Schedule Employees.
29 Sep 82, 19p FPCD-82-47, B-209033

Special pay and benefits have been granted to select groups of General Schedule employees because of the nature of their work to help solve recruitment and retention problems. GAO has identified the major pay and benefit programs that provide for speical overtime pay, early retirement, and pay rates higher than those in the General Schedule. GAO also is providing a list of other Federal pay systems that exist and a compilation of prior GAO reports dealing with pay and benefit issues.

PB83-122853 PC **A02/MF A01**
General Accounting Office, Washington, DC. Human Resources Div.
Multiemployer Pension Plan Data Are Inaccurate and Incomplete.
25 Oct 82, 22p GAO/HRD-83-7, B-209057

The Multiemployer Pension Plan Amendments Act of 1980 made major changes to the Employee Retirement Income Security Act. The Internal Revenue Service and the Pension Benefit Guaranty Corporation are primarily responsible for administering and enforcing the amendments, and they need complete and accurate data. Multiemployer plans are required to report annually to these agencies. There is no assurance that all multiemployer plans are reporting as required and, when they do report, data are often missing or inaccurate. In an October 1981 report, GAO pointed out that these same conditions generally existed for data required to be reported by all types of pension plans. This report discusses the continued need for data management improvements.

PB83-123661 PC **A03/MF A01**
Rutgers - The State Univ., New Brunswick, NJ. Center for the American Woman and Politics.
Leaders of Organizations of Women Public Officials: Report From a Conference,
Diane Rothbard Margolis. 1980, 31p HUD-0002380
Grant HUD-H-5164RG

The principal topics of discussion at the first Conference for Leaders of Organizations of Women Public Officials in June 1980 are outlined. The goal of the conference was to bring together for the first time the leaders of all the organizations of women in government, to familiarize the organizations with each other's programs, to provide a forum for women from various types of organizations, and to discuss cooperative strategies for strengthening existing organizations. The conference focused primarily on general issues facing women in government and on existing organizations for women in government. Examination of the progress made by women in public life over the past decade showed a marked growth in the number and unity of women in public office, as symbolized by formation of organizations for women in government. Difficulties faced by women in government and ways in which cooperation among women in different spheres of public life can ease these difficulties was another topic of particular interest. Issues raised were the special responsibilities of women public officials; the relationship between appointed and elected officials and the approach of both to the women's movement; and the public image of women officials, including the prob-

lems of campaign fundraising and the compatibility of family and public roles. Finally, the development, successful programs, and fundraising methods of various organizations were briefly sketched. It is concluded that the conference enabled the representatives of 40 different women's organizations to explore their differences and to find new forms of cooperation that would benefit them in the 1980's. The conference program, a list of organizations, and their conference representatives are supplied.

PB83-123679 PC **A06**/MF **A01**
Rutgers - The State Univ., New Brunswick, NJ. Center for the American Woman and Politics.
Women's Organizations in the Public Service: Toward Agenda Setting,
Diane Rothbard Margolis. 1980, 119p HUD-0002381
Grant HUD-H-5164RG

The study describes existing organizations for women in public service and discusses problems and achievements of such organizations. Groups outlined include statewide organizations such as the California Elected Women's Association for Education and Research and California Women in Government; women's organizations in national public interest groups, e.g., the National League of Cities; women's organizations within professional associations such as the International City Management Association, and the Women in Management Subcommittee; organizations at the Federal level, e.g., the Federal Women's Program, the Interdepartmental Task Force on Women, Federally Employed Women, Washington Women's Network, and the American Federation of Government Employees Women's Affairs Department; and organizations of legislators such as the Congresswomen's Caucus, the National Order of Women Legislators, and the Women's Caucus of the Maryland Legislature. The historical background, the stated goals, the structure, and similar organizations are given both for these organizations and for training groups such as the Center for Women in Government and the Presidential Management Intern Program. Activities of such groups are generally directed at establishing a network of women in government who are able to lend one another support. Their activities include listings of women office holders, arranging meetings and exchanges between new and experienced women, establishing connections between levels of offices, lobbying for appointment of women, providing moral support and campaign skill support, publishing newsletters, and securing financing. The greatest achievement of women's organizations so far is their existence and proliferation; they have been less successful in changing the structures still in the control of men. Priority needs of women in public service are modification in attitudes of male leaders and procurement of staff, materials, and funds. Appendices describe discrimination patterns and list women's organizations at various levels.

PB83-123687 PC **A10**/MF **A01**
Rutgers - The State Univ., New Brunswick, NJ. Center for the American Woman and Politics.
Women in Government and Politics: Gender, Image and Public Life. Workshop Manual.
1981, 202p HUD-0002382
Grant HUD-H-5164RG

This training manual for women in government and politics is specifically geared to administrators and managers working in municipal, county, and State governments. The package contains workshop leaders' guide materials and exercises and packet handouts for participants. Workshop adaptations are included for political / administrative audiences. Six workshops deal with power, public image / private image, managing the media, saying "no" and delegating, sexuality, and time and staff management. Each workshop contains exercises to help participants examine attitudes, values, expectations, and skills that are influenced by stereotyped views of women. Some of these exercises provide an opportunity for participants to develop their managerial skills. Specific strategies are presented for dealing with individuals and situations which arise when women are treated according to gender rather than as elected officials or managers. The manual also contains problem definitions focusing on sexual harassment, sexism, sexism in language, the Queen Bee syndrome, women stereotyping other women, fear of success, overprotection by male colleagues, and personal / career dilemmas. Coping strategies and informational materials for workshop packets, sample evaluation forms, an annotated 14 - item bibliography, and suggested resources are included.

PB83-123695 PC **A10**/MF **A01**
Rutgers - The State Univ., New Brunswick, NJ. Center for the American Woman and Politics.
Career Development for Female Public Managers: Workshop Manual.
1981, 220p HUD-0002383
Grant HUD-H-5164RG

This manual presents career planning curricula for female public managers in the areas of career decisionmaking; career switching and changing tracks; career teams, networking, and mentoring; life planning and career planning; office politics and organizational structure. Objectives of the workshop are to introduce career planning to individuals and set up systems for mutual support. The manual begins with problem definitions, presents the workshop components, suggests coping strategies, and supplies information materials for workshop packets. Each workshop contains exercises to help participants examine attitudes, values, expectations, and skills influenced by stereotyped views of women. The first workshop component, career decisionmaking, discusses such topics as self - concept, feelings about success, personal values and job demands, and functional skills. Considerations of career change include skills analysis and goal setting. The career teams component deals with identifying and building networks and mentor relationships, and the benefits and risks of career planning. Life and career planning relates the self - concept with career planning, and suggests weighing interests and job demands, based on an assessment of personal needs. Among the coping strategies taught are approaches to requesting a raise, increasing visibility, applying for a promotion, initiating performance evaluation, resume writing guidelines, and interview strategies. A sample evaluation form, about 50 references, and a variety of exercises are provided.

PB83-124917 PC **A18**/MF **A01**
Saint Louis Univ., MO.
Research on Youth Employment and Employability Development: The Labor Market Experience of 14-21-Year-Olds.
Youth knowledge development rept.,
J. R. Endriss, and Joseph Froomkin. May 80, 413p
YKDR-2.6
Contract DL-99-9-2061-33-26

This volume contains findings from the Survey of Income and Education which was conducted by the Bureau of the Census. This survey provides more detailed information on youth than that supplied by the Current Population Survey. The volume organizes data by major youth labor market variables, including age, race, sex, family income and school status. It describes the labor force participation, work experience, earnings, and unemployment of 32.8 million young persons aged 14-21. The tables provide data on the interaction of family income and labor force status, as well as information concerning the status of Hispanic youth.

PB83-125567 PC **A05**/MF **A01**
General Accounting Office, Washington, DC. Human Resources Div.
VA's Agent Orange Examination Program: Actions Needed to More Effectively Address Veterans' Health Concerns.
Report to the Congress.
25 Oct 82, 91p GAO/HRD-83-6, B-208995

Although the Veterans Administration's (VA's) agent orange examinations were more thorough than veterans perceived, GAO generally confirmed veterans' complaints that (1) the examinations were not thoroughly conducted; (2) VA provided veterans little or no information on agent orange or their health; and (3) VA personnel were not well informed about the examination program. GAO makes several recommendations to improve program management and increase veterans' awareness of the agent orange-related services VA offers.

PB83-125781 PC **A13**/MF **A01**
EDUCOM, Princeton, NJ.
Simulation and Gaming Project for Inter-Institutional Computer Networking (Network Simulation Project).
Final rept.,
Ronald Segal, Donna Davis, James Emery, Norman Nielsen, and Beverly O'Neal. c1979, 276p
Grant NSF-MCS75-03634

This report describes an extensive study undertaken to identify and explore the critical issues and factors in the development of a national computer network for higher education and research. As part of this investigation, a simulation model was developed to test a variety of network organizational alternatives, and to help evaluate the ways in which a network would impact its member institutions. The modeling and data analysis efforts identified a number of incentives for networking including operational economies, economies of software development and maintenance, the availability of specialized services, information sharing and exchange, and a national software marketplace. On the other hand, a number of barriers were identified that must be addressed. These include a lack of incentives for users and software providers, network costs, difficulties in providing guarantees, institutional constraints on balance of trade, and several network organizational and management problems. (Copyright (c) 1979, Interuniversity Communications Council, Inc. (EDUCOM).)

PB83-125906 PC **A02**/MF **A01**
Georgia Inter-Univ. Task Force.
A Guide to Analyzing the Work Environment of Supervisory and Managerial Personnel,
Judi Komaike, and Robert L. Collins. May 79, 19p
NSF/RA-790775
Grants NSF-ISP79-08955, NSF-ISP76-24655
Prepared by Georgia Inst. of Tech., Atlanta. Engineering Experiment Station.

The handbook describes how to facilitate the improved performance of supervisory and managerial personnel using the contingency management approach. This approach includes five basic components: (1) behavioral analysis of the work environment; (2) specification of desired performance; (3) repeated measurement of performance; (4) rearrangement of reinforcement contingencies; and (5) evaluation of effectiveness. Also presented is a behavioral analysis of one unit of a Georgia city including results and recommendations. Methods and guidelines that will enable similar analyses in other work environments are provided.

PB83-126524 PC **A99**/MF **A01**
National Commission on Employment and Unemployment Statistics, Washington, DC.
Research on Youth Employment and Employability Development: Youth Unemployment - Its Measurement and Meaning.
Youth knowledge development rept. (Final).
May 80, 619p
Contract DOL-J-9-M-8-0027

In February 1978, a conference on Employment Statistics and Youth brought together experts to assess issues involved in the measurement of youth employment. The conference, held at the University of California at Los Angeles, produced a series of papers which are reprinted in this volume.

PB83-126532 PC **A11**/MF **A01**
Manpower Demonstration Research Corp., New York.
Research on Youth Employment and Employability Development: Schooling and Work among Youths from Low-Income Households.
Youth knowledge development rept. (Final),
Suzanne Barclay, Christine Bottom, George Farkas, Ernst Stromsdorfer, and Randall J. Olsen. Apr 80, 238p YDKP-2.13
Grant DL-28-36-78-36

This volume reports on the findings of a survey of employment and schooling patterns among low-income youth. The survey was conducted as a baseline study for the Youth Incentive Entitlement Pilot Projects (YIEPP). Over 7,500 youth residing in both YIEPP and non-YIEPP sites participated. The study analyzed the relationships between a number of socioeconomic factors and the employment and educational experience of disadvantaged youth.

PB83-126540 PC **A08**/MF **A01**
Employment and Training Administration, Washington, DC. Office of Youth Programs.
Research on Youth Employment and Employability Development: Factbook on Youth.
Youth knowledge development rept. (Final).
May 80, 156p YKDP-2.5

This volume is a compendium of information on the status of youth in this country. The report includes data on six social and economic indicators: population growth; marital and family status; educational status; historical trends in labor force and employment status;

labor force and employment status by socioeconomic characteristics; and crime and delinquency statistics.

5J. Psychology (Individual and Group Behavior)

ED-202 490 Not available NTIS
Iowa Univ., Iowa City.
Visual Strategies in Problem Solving: An Aspect of Visual Literacy.
Richard D. Herring. Jun 80, 22p WORKING PAPER no.3
Available from ERIC Document Reproduction Service (Computer Microfilm International Corporation), Arlington, VA 22210.

The concept of visual literacy as a performance criterion is briefly considered and difficulties inherent in such a concept are discussed. Previous work in the area of visual literacy is selectively and critically reviewed, noting recurrent problems in research methodology. A rationale is then presented for conducting research which would be relevant to a field investigating the role of visual strategies in problem solving tasks. A 49-item bibliography is included.

PB83-118521 PC **A03**/MF **A01**
Children's Bureau, Washington, DC.
Cuando Su Hijo Va al Hospital (When Your Child Goes to the Hospital).
7 Oct 82, 41p DHHS/PUB/OHDS-79-30246

The report is a guide to help parents and other family members prepare the child for an expected stay in the hospital.

5K. Sociology

PB83-114181 PC **A04**/MF **A01**
MESA Corp., Orem, UT.
Cultural Resources Survey of the Flaming Gorge Peaking Power Project.
Final rept.,
V. Garth Norman, and David B. Merrill. 9 Nov 81, 74p MESA/CRM/PAPER-4
Contract DI-1-07-40-S1728

MESA Corporation conducted a 40 percent sample survey of a corridor 200 feet wide on each side of the Green River from Flaming Gorge Dam to the Dinosaur National Monument boundary, the impact area of the proposed Flaming Gorge Peaking Power Project. Survey work was conducted in May, 1981. During the survey 15 prehistoric sites, 13 historic sites, and one site with both components were recorded. Six historic sites are considered eligible for inclusion in the National Register of Historic Places.

PB83-116657 PC **A02**/MF **A01**
Administration for Children, Youth and Families, Washington, DC.
Nuevao Enfoque Sobre Un Viejo Problema - 9 Preguntas y Respuestas sobre el Abuso y Desculdo de Menores (New Light on an Old Problem - 9 Questions and Answers About Child Abuse and Neglect).
1978, 23p DHEW/PUB/OHDS-78-31120

The report discusses the incidence of child maltreatment and the indications of abuse and neglect. The effects of maltreatment are described and the need to help the persons involved is emphasized.

PB83-116905 PC **A06**/MF **A01**
MESA Corp., Orem, UT.
Cultural Resources Survey of the Duchesne River Area Canal Rehabilitation Program.
Final rept.,
V. Garth Norman, David Merrill, and Don D. Southworth. 12 Feb 82, 105p MESA/CRM/PAPER-5
Contract DI-1-07-40-S1728

MESA Corporation conducted a Class III intensive survey of cultural resources along portions of existing irrigation canals that are part of the Duchesne River Area Canal Rehabilitation Program. Survey work began 5 July 1981 and was completed 8 July 1981. MESA archaeologists surveyed a 200-foot corridor along 17 preselected sections of Duchesne River area canals with a total distance of 54.7 kilometers. The survey began on the eastern-most end of the proposed rehabilitation near Myton, Utah, ran west to Duchesne, Utah, and then northwest to end near Stockmore, Utah. Survey work revealed one prehistoric and 15 historic sites. The prehistoric site was evaluated and judged potentially eligible for the National Register.

PB83-117770 PC **A18**/MF **A01**
National Audubon Society, Naples, FL. Ecosystem Research Unit.
Ecological Portion, Florida Peninsula Natural Region Theme Study.
Final rept.,
Linda C. Duever, John F. Meeder, and Michael J. Duever. 15 Mar 82, 410p
Contract NPS-CX-0001-1-0093
Portions of this document are not fully legible.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This study reports on the ecological sites in the Florida Peninsula Natural Region. It describes and maps the distribution of 34 different natural communities, and evaluates 39 sites.

PB83-118372 PC **A05**/MF **A01**
Administration for Children, Youth and Families, Washington, DC.
El Cuidado de Su Bebe (Infant Care).
1981, 91p DHHS/PUB/OHDS-81-30013

The report covers the basics of caring for an infant (e.g., feeding, clothing, bathing, health care). It is written for parents who want to make sure their baby has a good start in life.

PB83-118661 PC **A10**/MF **A01**
Bryn Mawr Coll., PA. Graduate School of Social Work and Social Research.
Review of Policies Affecting the Housing Decisions of Older Americans.
Interim rept. 1979-80,
Lloyd Turner, Thomas Walz, Martha Pressler, and Thomas McArdle. Dec 81, 202p
Grant DHEW-AOA-90-AR-2118
Also pub. as Iowa Univ., Iowa City. Inst. of Urban and Regional Research technical rept. no. 139.

This report is a review of current public policies and programs influencing the residential movement decisions of older households living in community housing. It examines the major federal, state, and local initiatives which affect housing decisions. The report includes sections on (1) the decision to move or stay; (2) adjustments in living arrangements; and (3) the choice of destination. Detailed descriptions of the effects of these policies and programs are included in two appendices.

PB83-118711 PC **A13**/MF **A01**
Arkansas Univ., Fayetteville.
Potential National Natural Landmarks of the Interior Highlands Natural Region, Central United States.
Final rept.,
Doy Zachry, and Edward Dale. Jul 79, 277p
Contract NPS-CX-1200-6B-013

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This study reports on the ecological and geological sites of the Interior Highlands Natural Regions. It describes the vegetation and geologic features of the region and evaluates 94 sites.

PB83-118752 PC **A13**/MF **A01**
Brigham Young Univ., Provo, UT.
A Survey of Natural Landmark Areas of the North Portion of the Colorado Plateau.
Final rept.,
S. L. Welsh, J. K. Rigby, and W. K. Hamblin. May 80, 282p
Contract NPS-CX-1200-6B-048

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This study reports on the ecological and geological sites of the northern portion of the Colorado Plateau Natural Region. It describes the vegetation and geologic features of the region and evaluates 65 sites.

PB83-119073 PC **A06**/MF **A01**
Decision Science Consortium, Inc., Falls Church, VA.
An Assessment of Behavioral Tests to Detect Impaired Drivers.
Final rept. Aug 80-Dec 81,
K. J. Snapper, D. A. Seaver, and J. P. Schwartz. Dec 81, 121p DOT-HS-806 211
Contract DTNH22-80-C-07565

This study was conducted to assess the feasibility and practicality of roadside behavioral tests for driving impairment. Such tests are seen as complementary to chemical tests of blood drug concentration. Methodological issues in the use of behavioral tests are identified and discussed focusing specifically on the validity of behavioral measures. It is argued that if validity is defined as predicting accidents, it will always be low for any behavioral test as well as for chemical tests because of the inherent unpredictability of accidents. The rationale for using behavioral tests, particularly a battery of behavioral tests, to detect driving impairment is, then, that such tests can measure the level of behavioral skills involved in driving. In order to evaluate various behavioral tests, a large literature was reviewed to identify potential tests and any previous studies of them. Criteria for evaluating the tests were developed, including validity, reliability, ease of operational use, safety, and diagnosticity. Each of 54 tests were scored on each criterion, and criteria were weighted by their relative importance from the perspectives of researchers and users to produce an overall index of the feasibility of each test.

PB83-119396 PC **A04**/MF **A01**
Veterans Administration, Washington, DC. Office of the Controller.
Data on Vietnam Era Veterans.
Sep 80, 65p VA/80-6183
See also PB80-222318.

The document consists of a series of tables presenting information on Vietnam veterans, and includes statistics for the following categories: veteran population, employment status, medical care, compensation and pension awards, education, housing assistance, and VA expenditures from appropriated funds.

PB83-119560 PC **A18**/MF **A01**
Western Washington Univ., Bellingham.
Potential Geologic Natural Landmarks, North Pacific Border Province.
Final rept.,
Don J. Easterbrook, and Susan L. Marsh. Nov 78, 412p
Contract NPS-CX-1200-5B-012

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 52 areas of geologic significance throughout the North Pacific Border natural region which is the coastal section of the states of Washington, Oregon, and the northern half of California, above San Francisco.

PB83-119636 PC **A14**/MF **A01**
Louisiana State Univ., Baton Rouge. School of Forestry and Wildlife Management.

A Survey of Potential Natural Landmarks, Biotic Themes, of the Eastern Gulf Coastal Plain.
Final rept.,
Larry L. Furniss. Dec 80, 313p
Contract NPS-9900-X-20048

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This study reports on the ecological features of the eastern portion of the Gulf Coastal Plain and evaluates 103 sites.

PB83-119651 PC **A16**/MF **A01**
Arizona Univ., Tucson. Dept. of Geosciences.
A Survey of Potential Natural Landmarks, Biotic Themes, of the Mojave-Sonoran Desert Region.
Final rept.,
Paul S. Martin. Nov 79, 366p
Contract NPS-CX-1200-5B-011

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and/or geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This study reports on the ecological sites in the Mojave-Sonoran Desert Natural Region. This report discusses some 70 plant community-types and evaluates 103 sites.

PB83-119669 PC **A09**/MF **A01**
Washington Univ., Seattle. Dept. of Botany.
Proposed Ecological Natural Landmarks in the Brooks Range, Alaska.
Final rept.,
Lawrence C. Bliss, and Karen M. Gustafson. Mar 81, 180p
Contract HCRS-C9216(78)

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and/or geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 39 areas of ecological significance in the Brooks Range natural region of Alaska.

PB83-119693 PC **A12**/MF **A01**
Museum of Northern Arizona, Inc., Flagstaff.
A Survey of Potential Natural Landmarks of the Southern Colorado Plateau.
Final rept.,
Nancy H. Goldberg, Rochelle Harrison, and J. W. Jordan. 30 May 81, 261p
Contract NPS-CX-1200-6B-049
Portions of this document are not fully legible. Color illustrations reproduced in black and white.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and/or geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report discusses the ecological features of the southern portion of the Colorado Plateau Natural Region and reports on 43 specific sites which have ecological significance.

PB83-119719 PC **A16**/MF **A01**
Indiana Univ. at Bloomington. Water Resources Research Center.
A Survey of Potential Natural Landmarks, Geologic Themes, of the Western Central Lowlands.
Final rept.,
M. T. Szymkowicz, and R. V. Ruhe. May 81, 362p
Contract HCRS-C9029(78)
Portions of this document are not fully legible.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and/or geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 91 areas of geologic significance throughout the western portion of the Central Lowlands natural region which extends from the northern border of North Dakota south to the northeastern part of Texas.

PB83-119727 PC **A17**/MF **A01**
Center for Northern Studies, Wolcott, VT.
Proposed Ecological Natural Landmarks in the Pacific Mountain System, Alaska.
Final rept.,
Steven B. Young, and Alan R. Batten. Aug 82, 389p 22
Contract NPS-CX-0001-1-0080
Prepared in cooperation with Alaska Univ., Fairbanks.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 62 areas of ecological significance in the Pacific Mountain System natural region of Alaska.

PB83-119743 PC **A11**/MF **A01**
Hawaii Univ., Honolulu.
Natural Landmarks Survey of the Hawaiian Islands.
Final rept.,
Agatin T. Abbott, E. Alison Kay, Charles Lamboureux, and William L. Theobald. Jul 81, 236p
Contract NPS-CX-0001-1-0074
Prepared in cooperation with Pacific Tropical Botanical Garden, Kalaheo, HI.Portions of this document are not fully legible.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and geological features characteristics of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 39 areas of ecologic and geologic significance throughout the Hawaiian Islands. Sites are classified and given a priority rating based on their representation of the ecologic and geologic themes.

PB83-119750 PC **A21**/MF **A01**
West Virginia Univ., Morgantown.
A Survey of Potential Natural Landmarks of the Appalachian Plateaus Region.
Final reet.,
Charles H. Baer, Robert E. Behling, and Richard S. Little. 1982, 481p
Contract NPS-CX-0001-1-0094
Portions of this document are not fully legible.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 91 potential landmark areas of national ecologic and geologic significance throughout the Appalachian Plateaus natural region, extending from northern Alabama to New York.

PB83-120139 PC **A03**/MF **A01**
Children's Bureau, Washington, DC.
Es Divertido Construir (Toys Fun in the Making).
1974, 35p DHEW/PUB/OHD-74-62
Text in Spanish.

The brochure offers ideas for making children's toys and games from throw away material found in the home. Simple and fun to make. The toys and games encourage and help children to learn and practice specific skills, such as the ability to recognize colors, shapes and sizes of objects; coordinate hand and eye movements; count; and remember to use words to express themselves.

PB83-120428 PC **A02**/MF **A01**
Children's Bureau, Washington, DC.
Un Nino Desventajado en Su Casa (A Handicapped Child in Your Home).
1974, 19p DHEW/PUB/OHD-74-48

The report discusses the problems, hardships and rewards that parents will experience in caring for a handicapped child at home.

PB83-121657 PC **A19**/MF **A01**
Pacific Northwest Forest and Range Experiment Station, Corvallis, OR. Forestry Sciences Lab.
A Survey of the Proposed Natural Landmarks Ecological Themes, Cascade Range Province,
Sarah E. Greene, and Jerry F. Franklin. Dec 80, 430p
Contract DI-CX-1200-6-B018
Color illustrations reproduced in black and white.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 107 areas of ecologic significance throughout the Cascade Range natural region which includes the Cascade Range mountains from the Washington-Canadian border to just south of Lassen Volcanic National Park in California.

PB83-121673 PC **A99**/MF **A01**
Center for Northern Studies, Wolcott, VT.
Proposed Geological and Ecological Natural Landmarks in Interior and Western Alaska. Volumes 1 and 2.
Final rept.,
Steven B. Young, and James C. Walters. Jan 82, 652p CONTRIB-21
Contract NPS-CX-200-8-0017
Prepared in cooperation with University of Northern Iowa, Cedar Falls.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 87 sites of ecological and/or geological significance in the Interior and Western natural region of Alaska.

PB83-121681 PC **A99**/MF **A01**
Thorne Ecological Inst., Boulder, CO.
Natural Landmarks of the Southern Rocky Mountains Region.
Final rept.,
John W. Marr, David M. Armstrong, Halka Chronic, John Chronic, and Robert W. Pennak. Dec 80, 702p
Contract NPS-CX-1200-B046

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 177 areas of geological and/or ecological significance in the Southern Rocky Mountains natural region, including areas in Colorado, New Mexico, and Wyoming.

PB83-121699 PC **A24**/MF **A01**
Brigham Young Univ., Provo, UT.
Proposed Natural Landmarks of the Middle Rocky Mountains: Geologic Themes.
Final rept.,
J. Keith Rigby. Feb 81, 571p
Contract NPS-CX-0001-1-0086

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 115 sites of geological significance in the Middle Rocky Mountains natural region, including areas in Idaho, Montana, Utah, and Wyoming.

PB83-121756 PC **A24**/MF **A01**
Montana Univ., Missoula.
Proposed Natural Landmarks of the Northern Rocky Mountains: Geologic Themes.
Final rept.,
Donald W. Hyndman, and David Alt. Jan 82, 552p

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 130 sites of geological

significance in the Northern Rocky Mountains natural region, including areas in Idaho, Montana, and Washington.

PB83-121764 PC **A20/MF A01**
New Mexico State Univ., Las Cruces. Dept. of Biology.
A Survey of Potential Natural Landmarks of the Chihuahuan Desert - Mexican Highland Region. Volume 1: Landform and Biotic Themes.
Final rept.,
William A. Dick-Peddie. Aug 82, 453p
Contract NPS-CX-0001-1-0095

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and/or geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 43 areas of ecologic and geologic significance throughout the central of southwest New Mexico, a small portion of southeastern Arizona, and extreme western Texas. Sites are described, evaluated, and given a priority rating based on their representation of ecologic and geologic themes.

PB83-121772 PC **A12/MF A01**
Geological Survey, Reston, VA.
Potential Natural Landmarks Selected for the Geologic Themes Study on the Atlantic Coastal Plain, Florida to Cape Cod, Massachusetts.
Final rept.,
Carol M. Shifflett. 1981, 270p
Contract NPS-PX-0001-3-0447
Color illustrations reproduced in black and white.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 83 areas of geologic significance throughout the Atlantic Coastal Plain between northern Florida and Cape Cod, Massachusetts.

PB83-123034 PC **A04/MF A01**
RAND Corp., Santa Monica, CA.
Who Applies for Housing Allowances. Early Lessons From the Housing Assistance Supply Experiment,
Phyllis L. Ellickson. Aug 81, 56p R-2632-HUD, HUD-0002301
Contract HUD-H-1789

As part of the Housing Assistance Supply Experiment's examination of who participated in the allowance program and why, this study examines the factors affecting an eligible household's decision to apply for a housing allowance during the first year of program operations. Using data on such households in St. Joseph County, Ind., it tests a two - stage model of the enrollment choice. The first stage analyzes how people learned about the program; the second analyzes factors affecting the decision to apply for those who knew about the program. The analysis indicates that there are two groups of nonparticipants; the most needy and the least needy. Many of the neediest households failed to enroll because (1) some had not heard of the program, (2) others had heard but could not accurately judge its relevance to them, and (3) still others lacked the social support to overcome negative attitudes toward government aid. Efforts to increase enrollment among this group need to combat the negative effects on information costs and aversion to assistance on the decision to apply. These results suggest that outreach campaigns based on radio and word - of - mouth communication have the most potential for reducing nonparticipation among the neediest eligibles. Radio is particularly relevant for informing elderly singles who constitute a high proportion of the radio audience. However, personal contact is the key to identifying isolated eligibles, helping them understand what the program offers, and convincing them to apply. Enlisting the cooperation of personnel from other social service agencies and community groups is also recommended. This analysis should be useful to policymakers concerned about underuse of government assistance programs and to administrators of such programs. Footnotes and tabular data are included. Supplementary tables and 33 references are appended. (Author abstract modified).

PB83-123083 PC **A04/MF A01**
Kansas Univ., Lawrence.
Private Delivery of Public Services: An Annotated Bibliography,
Charles H. Levine. 1981, 52p HUD-0002308
Grant HUD-H-2829RG

This annotated bibliography presents 230 citations of publications concerned with the private delivery of public services. Under the subheading of contracting, 169 citations are given, while the general category contains 6. The nonservice option subheading contains only 1 listing, but the voluntary service delivery class has 9, the self - service / coproduction group contains 23, and the vouchers group presents 16 publications. The listings include journal articles, government reports, and books and date from the late 1960's to 1980, with most from the late 1970's.

PB83-123133 PC **A07/MF A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Changing Conditions in Large Metropolitan Areas.
Nov 80, 147p HUD/PDR-637, HUD-0002313

To assist policy analysts, public officials, and researchers in discovering trends in the condition of urban areas, this study pulled together data on 85 large urban areas from various sources. Its goal was to identify and review the level and direction of changes in the condition of large cities and their surrounding areas. The trends described in the tables, which form the bulk of this report, are divided into the three standard dimensions of urban conditions -- social, economic, and fiscal. In most of the tables, the data are structured so that the central city can be easily compared with its outside area. The tables include information on population, density, and migration, as well as data on specific characteristics of the population, such as race, age, income, housing, and crime. Also presented are data on total employment by place of work, manufacturing employment, unemployment rates, and electrical use patterns as an example of energy use. Tables highlighting the governmental and fiscal characteristics of these large cities include information on government structure, taxation, and intergovernmental grants - in - aid. The report also reviews the major data sources used in the study. The sources are organized by type of indicator -- social, economic, and fiscal -- and by characteristics within each type. Most of the data for the study came from the Department of Commerce, Bureau of the Census, and the "County and City Data Book, 1977." Significant trends indetermining the overall urban condition of the areas examined include the loss in population of the central cities of the East and Midwest and the gain in population of the cities in the South and West, the increase in the black population in all but five of the cities studied, the decline in central city per capita income from 1960 - 70, and the decline in central city employment in the East from 1970 - 77. Other trends were the decline in property tax rates in many central cities but the increase in nonschool tax collections in central cities and the increasing dependence of the central cities on intergovernmental aid. An appendix includes area components of standard metropolitan statistical areas (1970).

PB83-123141 PC **A04/MF A01**
North Carolina Governor's Commission on Housing Choices for Older Adults, Raleigh.
Independent Living Arrangements for the Later Years: A Catalog of Potential Housing Choices for Older People in North Carolina,
Ruth L. Mace. 1981, 62p HUD-0002314
Grant HUD-H-5359SG
Prepared in cooperation with the North Carolina Dept. of Administration,Raleigh.

This catalog outlines independent living arrangements available for the elderly. It is directed to a North Carolina audience of housing consumers, suppliers (public and private) of housing and housing - related services, and agents of consumers and suppliers. Not all of the options presented are available in North Carolina but have been included to let people know what the options might be and thus widen their range of choices in planning future housing arrangements. The catalog begins by suggesting how to explore the alternatives and what organizational resource options should be locally provided to help with this exploration. It treats potential money sources to make housing choices possible and includes a chart displaying all the options presented. These options are broken down into two categories: those to help homeowners and renters stay at home (avoid institutionalization) and those to help owners and renters who are considering moving. The "stay put" options for homeowners include (1) continuing routine home maintenance, (2) making minor or major structural modifications, and (3) homesharing. The ownership options for movers focus on condominium ownership, cooperative housing ownership, mobile homes, and shared houses. Charts for each category of options include suggestions of organizations at the local level that might arrange for options to be made available or advise on how best to start programs to make them available, as well as appropriate option providers and financing sources (public and private). Following each chart, additional information is included about each option, providing specific examples of model programs. An appendix provides supplementary information, a chart showing relevant Federal programs as of September 1981, and a list of selected readings. (Author abstract modified).

PB83-123158 MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Conversion of Rental Housing to Condominiums and Cooperatives: State and Local Conversion Regulations.
Aug 81, 62p HUD/PDR-690, HUD-0002315
Available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, order number 023-000-00670-1.

This report reviews the history of conversion legislation and discusses various issues and trends associated with State and local regulation of conversion. The development of conversion law in the past 2 decades is examined, and the basic types of conversion regulation are described. These types include (1) tenant protections, (2) rental stock protections, and (3) buyer or consumer protections. Next, the report focuses on the intergovernmental aspects of regulations and includes the arguments often made in cases challenging the legality of conversion laws. The major provisions of the Uniform Condominium Act, particularly as they relate to conversions, are then described to demonstrate a comprehensive model State condominium statute. In addition, the report examines the scope of local conversion regulation and the prospects for the future enactment of laws regulating conversions. The report reviews all relevant State statutes and 54 separate local ordinances (selected from the Nation's 37 largest Standard Metropolitan Statistical Areas) which regulate conversions to illustrate both their range and variance throughout the country. Tables and 56 footnotes are provided.

PB83-123182 PC **A06/MF A01**
NAHB Research Foundation, Inc., Rockville, MD.
Cost and Marketability of Housing for the Physically Handicapped. Summary Report.
1981, 117p HUD-0002318
Contract HUD-H-2627

HUD commissioned the development of residential housing standards for the handicapped because the lack of such guidelines has forced many physically disabled persons to occupy housing which does not allow for independent living. The cost study is based on a review of pertinent construction literature, consultation with experts, identification and selection of available products, and examination of State regulations. An extensive section of the report is devoted to specific plans for redesign of two sample houses and four apartments and to exact estimates of the costs for redesign of the units. The cost study finds that the HUD specifications for the physically handicapped can meet adaptability standards so that the same dwelling could fit the purposes of people with various handicaps and those of the nonhandicapped consumer as well. One - story single family homes with concrete slab foundations and suitable outside landscaping are most easily adapted to the needs of the handicapped. Homes and apartments built for mass markets require expansion of nonliving areas such as bathrooms, hallways, and sliding doors to avoid limitations in clear opening space. Bathroom space problems can be reduced by eliminating lavoratories, increasing dimensions, and installing three - foot doors. Kitchens require an "L" rather than a "U" design and careful layout of cabinets and appliances. Considerable innovative design work is required to provide countertop and sink adjustability without excessive cost. Appliances accessible from the front are not necessarily the most popular models

and may prove expensive, as in the case of the side - by - side refrigerator. On the whole, however, the standards (ANSI A117.1(1980)) are a reasonably cost - effective method for providing housing that is marketable to a variety of customers. An annotated bibliography of over 60 works, a list of manufacturers, and numerous illustrated site plans are supplied.

PB83-123265 PC **A04**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Conversion of Rental Housing to Condominiums and Cooperatives: Impacts on Elderly and Lower Income Households.
Aug 81, 63p HUD/PDR-689, HUD-0002329

This report examines the impact of condominium conversion on elderly and low - income households who lived in rental buildings prior to the conversion. Such impacts include higher housing costs and difficulties in finding alternative rentals. Data are from a survey conducted in January 1980 of current and former residents of buildings converted to condominiums and cooperatives between 1977 and 1979 in 12 metropolitan areas which had a large volume of conversion activity. A total of 20 percent of all preconversion households were headed by persons at least 65 years of age, and 18 percent had incomes which were at or below $12,500. A total of 17 percent of all households who moved out after their buildings were converted were elderly, and 19 percent were low income; 10 percent of those who moved out were both elderly and low income. As of January 1980, 23 percent of the elderly households residing in converted buildings bought their units, 28 percent continued to rent their converted units, and 49 percent moved. The most frequent reason for buying the units or continuing to rent them after conversion was a reluctance to move. Elderly households who purchased their converted units experienced a median, before - tax increase in housing costs of 11 percent. This contrasts with a more than 40 percent increase for nonelderly tenant buyers. However, 36 percent of all elderly tenant buyers considered their postconversion housing costs to be "high" or "very high." Changes in housing costs for both elderly and low - income continuing renters, from pre - to post conversion periods, were slight. Most elderly and low - income persons who moved at the time of conversion had difficulty finding new units. If past trends continue through the year 1985, 5 percent of all elderly renters and 1 percent of all low - income renters will face conversion at least once. Footnotes, tables, and study instruments are appended. (Author abstract modified).

PB83-123281 PC **A11**/MF **A01**
NAHB Research Foundation, Inc., Rockville, MD.
Cost and Marketability of Housing for the Physically Handicapped: Final Report,
E. Lee Fisher. 1981, 229p HUD-0002332
Contract HUD-H-2627

This study investigates the cost and marketability of accessible housing for the physically handicapped through the construction and evaluation of single - family and multifamily units built according to the proposed new American National Standards Institute (ANSI) Standard A117.1. The study conducted a literature review and discussed the design and construction of homes for the handicapped with experts in the field. It also examined the current state of regulations, codes, standards, construction processes, and cost and marketability related to these homes and analyzed builders' designs of homes and apartments for the handicapped. Findings indicate that ANSI Standard A117.1 is, for the most part, comprehensive and understandable for the typical builder of multifamily and single - family dwellings. Specific requirements of the Standard are discussed as they relate to dwelling and foundation types, exterior and interior accessibility, bathrooms, kitchens, and appliances. Overall, builders are not overly concerned with the needs of the handicapped. Developing designs that are adaptable to the handicapped has not been widely pursued. To promote housing for the physically handicapped, manufacturers should be provided with national and regional market data and specific product requirements, the Standard should be made consistent with existing safety standards and national and local codes, builders should be provided with local market information, lines of communication should be opened between the handicapped and builders and apartment owners, and a plan catalog of adaptable homes should be developed. Other recommendations suggested involve providing financing breaks for handicapped persons to purchase new homes under the Standard and developing an ANSI A117.1 educational program for builders and others which will detail the Standard's specific requirements. Tables, diagrams, and site plans are provided. Appendices include over 60 references (most citations are accompanied by summaries), a list of documents containing codes and standards, a list of experts consulted, a list of manufacturers producing products for the handicapped, and a comparison of five State handicapped housing codes.

PB83-123307 PC **A04**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Conversion of Rental Housing to Condominiums and Cooperatives: Volume of Conversion Activity in Selected Metropolitan Areas.
Aug 81, 62p HUD/PDR-691, HUD-0002334

This followup report presents detailed data on the number of conversions which occurred in selected metropolitan areas between 1970 and 1979 and provides an indication of the extent of conversion activity that took place in 1980, as observed by local housing market specialists. Nationwide, 336,000 rental units were converted to condominiums and cooperatives during 1970 - 79, with 71 percent of them converted between 1977 - 79. Over three - fourths of all converted units nationally are located in the 37 largest Standard Metropolitan Statistical Areas (SMSA's). Almost 60 percent have taken place in just 12 metropolitan areas, including Boston, Mass.; Chicago, Ill.; Denver - Boulder, Colo.; Houston, Tex.; Los Angeles - Long Beach, Calif.; Miami, Fla.; Minneapolis - St. Paul, Minn.; New York City, N.Y.; San Francisco - Oakland, Calif.; Seattle - Everett, Wash.; Tampa - St. Petersburg, Fla.; and Washington, D.C. The Chicago SMSA has had the largest number of conversions over the last decade. Although the Denver - Boulder SMSA has had fewer units converted, the number of conversions here represents a higher percentage of the available housing stock than in Chicago. Variations also occur in the degree to which rental conversions represent a central city or a suburban phenomenon and in the concentration or dispersion of conversion activity within neighborhoods or census tracts. The volume and pattern of conversion activity during 1980 in 15 SMSA's are indicated. This activity was affected by a combination of national and local conditions (i.e., high interest rates, competition, State and local conversion regulations). Footnotes and detailed tables and maps are provided.

PB83-123331 PC **A03**/MF **A01**
NAHB Research Foundation, Inc., Rockville, MD.
Approach for the 80's: Affordable Housing Demonstration,
E. Lee Fisher. 1981, 34p HUD-0002337
Contract HUD-H-5125CA

Reported here are the accomplishments of Approach '80, which represents a joint effort between HUD and representatives of the private housing industry to produce comfortable, safe, attractive, and affordable homes. The Approach '80 subdivision, located in a fringe area of Las Vegas, Nev., is planned for a relatively high density of inhabitants and contains single - family detached homes, duplexes, and townhouses arranged in a way that provides privacy and a feeling of openness. The average sales price of the homes was about $51,000, approximately $10,000 lower than comparable homes in the area. The report discusses matters of land development, establishment of a homeowners' association to protect common areas, and construction details of the homes themselves. Modular design, value engineering techniques, and construction systems are delineated and illustrated for the various models. Extensive cost analyses are provided comparing onsite versus offsite land development costs, and Approach '80 versus conventional Las Vegas development practices. Costs are cited for Approach '80 in such categories as fees and engineering, raw land, development, direct construction, indirect construction, overhead and financing, and sales and marketing. Photographs and floor plans are given.

PB83-123349 PC **A14**/MF **A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1980. United States and Regions. Part A: General Housing Characteristics.
Feb 82, 302p HUD-0002339

This report presents statistics on general housing characteristics from the 1980 Annual Housing Survey for the United States by inside and outside standard metropolitan statistical areas (SMSA's) and each of the four geographic regions. The statistics presented in this report are based on information from a sample of housing units. The information for the survey was collected by personal interview from mid - August 1980 to December 1980. Tables present data on characteristics of the housing inventory, 1980 and 1970; financial characteristics of the housing inventory, 1980 and 1970; selected characteristics for mobile homes and trailers; selected characteristics for new construction units; selected characteristics of year - round vacant housing units; and 1973 characteristics of housing units removed from the inventory in 1980. Data are listed according to all races, black -- with black householder, and Spanish origin -- with Spanish - origin householder. A map, pie charts, and a finding guide listing the characteristics covered in this report are included. Appendices describe the geographic area classifications, provide definitions of subjects covered in the report, include the survey questionnaire, and present information on sample design, estimation, and accuracy of the data.

PB83-123356 PC **A99**/MF **A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1978. Housing Characteristics for Selected Metropolitan Areas: Philadelphia, Pa.-N.J., Standard Metropolitan Statistical Area.
Feb 82, 605p HUD-0002340

This report presents statistics on housing and household characteristics from the 1978 - 79 Annual Housing Survey conducted in the Philadelphia, Pa. - N.J. standard metropolitan statistical area (SMSA). The statistics presented in this report are based on information from a sample of housing units. The information was collected by personal interview from April 1978 through March 1979. Separate data are shown for "in central cities" and "not in central cities," as well as for the SMSA as a whole. Data are presented according to all races, black -- with black household head, and Spanish origin -- with household head of Spanish origin. Tables show general housing characteristics, present indicators of housing and neighborhood quality by financial characteristics, highlight housing characteristics of recent movers, and focus on energy - related characteristics. Maps and table - finding guides are included. Appendices give area classifications, definitions, and explanations of subject characteristics; present the survey questionnaire; and explain source and reliability of the estimates.

PB83-123364 PC **A02**/MF **A01**
Rutgers - The State Univ., New Brunswick, NJ. Center for the American Woman and Politics.
Capacity Building Programs for Women in Government.
Final rept.
25 Sep 81, 22p HUD-0002341
Grant HUD-H-5164RG

This is the final report of a two - pronged capacity - building program for women in government that consisted of a conference for leaders of organizations of women public officials and of a series of workshops for women in government and politics. The report delineates conference goals, participants, program, materials, and evaluation, and comments on staff and the conference's followup. The conference sought to bring together leaders of all organizations which represent women in elective and appointive governmental offices and the governmental professions, to familiarize the organizations with each other's existence, and to provide a forum for discussion and cooperation. Conference participants numbered 75 leaders and staff from over 40 organizations, most of whom rated the conference positively. Objectives of the workshop series were to develop techniques to assist women in the public sector in handling troublesome situations stemming from their presence in the public managerial and electoral work world. The workshops were also intended to provide technical assistance for women in public service to encourage the type of career planning that will facilitate upward mobility within public sector management. Workshop preparation and development of training manuals and curricula guides are described. A total of eight workshops were conducted in 1980 at six State or national meetings, reaching an audience of 487 elective and managerial women. It is concluded that the conference served to strengthen organizations of women public officials while the workshops assisted individual women in the public sector.

PB83-123380 PC A03/MF A01
Urban Inst., Washington, DC.
Sectoral Dynamics in Urban Housing: A Model Design,
C. Duncan MacRae. Dec 76, 39p HUD-0002345
Contract HUD-H-2162R

This paper develops a short - run model of urban housing that allows for both income differentials and neighborhood externalities without assuming that income and race are directly related. Rather than divide urban land into concentric rings, as in previous work, the urban area is parceled into a finite number of sectors of arbitrary size and shape. The paper begins with a specification of the model in terms of resource endowment, production technology, and aggregate demand. The model is specified in this form so that an equilibrium solution can be obtained using a fixed point algorithm developed by Scarf. Following a description of the algorithm, the data requirements of the model are set out with general procedures for satisfying them. To compare and contrast the model with the Urban Institute Housing Model, a description of how the model could be implemented for Portland, Oreg., is detailed. A computer program for solving the Portland model prototype should be developed. Additionally, the sectoral model should also be implemented for a metropolitan area with a significant black population since Portland has few blacks. Tables, footnotes, and a map are included. (Author abstract modified).

PB83-123521 MF A01
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1979. United States and Regions. Part B: Indicators of Housing and Neighborhood Quality by Financial Characteristics.
Feb 82, 524p HUD-0002359
Available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402, order number 003-024-03613-4.

This report presents final statistics on indicators of housing and neighborhood quality by financial characteristics from the 1979 Annual Housing Survey for the United States inside and outside standard metropolitan statistical areas (SMSA's) and for each of the four geographic regions. Tables giving data by regions list information according to all races, black household head, and Spanish - origin household head. Utilization characteristics and services available, selected structural characteristics by deficiencies, and selected neighborhood characteristics are included. Other data cover income of families and primary individuals by utilization characteristics and services available, income of families and primary individuals by selected structural characteristics and deficiencies, income of families and primary individuals by selected neighborhood characteristics, value of owner - occupied housing by utilization characteristics and services available, gross rent, and value of owner - occupied housing. A map, table - finding guides, and two appendices are included. The appendices give area classifications, definitions, and explanations of subject characteristics, a facsimile of the Annual Housing questionnaire, and sources and reliability of estimates.

PB83-123547 PC A99/MF A01
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1978. Housing Characteristics for Selected Metropolitan Areas: San Francisco-Oakland, Calif., Standard Metropolitan Statistical Area.
Feb 82, 613p HUD-0002362

Data from the U.S Annual Housing Survey for the San Francisco - Oakland Metropolitan Area for 1978 are presented in extensive tables. Statistics relate to general housing characteristics; indicators of housing and neighborhood quality by financial characteristics, with special attention to structural deficiencies and plumbing; and financial characteristics of individuals in owner and renter - occupied housing. Also covered are housing characteristics of recent movers, and the relationship of family income and property value / rent to structural deficiencies, plumbing failures, and neighborhood characteristics. Data are presented separately for all races, for families with black heads of household, and for families with heads of household of Spanish origin. Data derive from Housing Census surveys of 1970 and 1975, and 1978 / 79. Appendices present area classifications, definitions and explanations of subject characteristics, a sample of the survey instrument, a discussion of the source and reliability of estimates, and a guide to finding tables.

PB83-123554 PC A10/MF A01
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Occasional Papers in Housing and Community Affairs: Volume 7,
Bernard H. Ross. Dec 79, 207p HUD-0002363

These papers focus on the housing responses of low - income households and measures of housing consumption. Three papers discuss the income elasticity of housing demand; the demand for rental housing by low - income families; and the effects of the Seattle, Wash., and Denver, Colo., Income Maintenance Programs on housing consumption of participating households. They all appear to call for a change in conventional thinking about the income elasticity of demand for housing, particularly for low - income households that would be affected by a housing subsidy or earmarked income grant, and even more specifically, for renter households who compose a major part of the nonaged segment of allowance - eligible populations. Other papers examine the use of hedonic indexes to measure housing quantity, the efficacy of hedonic estimation with the Annual Housing Survey, and the use of hedonic indexes to distinguish real changes in housing from changes in housing expenditures. The last two papers are based on analysis of the Housing Allowance Demand Experiment. This last paper asserts that any type of housing unit varies within a given housing market, that households achieve better or worse deals through careful shopping as well as by chance, and that household shopping behavior responds to changes in shopping incentives. Thus, estimates of changes in housing expenditures may substantially misestimate the real changes in housing programs. The papers include tables, notes, and graphs. Discussion papers are included.

PB83-123562 PC A05/MF A01
Urban Inst., Washington, DC.
Poverty, Housing Deprivation and Housing Assistance,
Sandra Newman, Raymond Struyk, and Donald Manson. Jan 82, 84p HUD-0002367
Contract HUD-H-2882-T022

This paper examines three aspects of the relationship between the permanence of poverty and the housing situation of poor households: whether permanent poverty is a good predictor of housing deprivation; the relation between permanency of housing deprivation and permanent poverty; and whether households who are likely to be permanently poor can be identified from among the applicants for housing assistance. The results of the analyses reported in the paper show that households who in 1978 were judged to be permanently poor lived in physically deficient dwellings at substantially higher rates than transiently poor households. Among renters the rates were 40 percent for the permanently poor and 22 percent for the transiently poor; among homeowners, the rates were 34 and 15 percent, respectively. Permanently poor homeowners were much less likely to be spending an excessive share of their incomes on housing than the transiently poor - 26 versus 42 percent. Conversely, all poor renters were likely to be spending more than 30 percent of their incomes on housing. Permanence of poverty was also associated with occupying a dwelling that has been persistently deficient. The combined incidence of households living in permanently deficient units and spending an excessive share of their incomes on housing was found to be low. Hence, those living in permanently deficient units and those with excessive housing expenditures constitute separate target populations. Finally, the permanently poor exhibited rates of persistent housing expense burdens and crowding about twice those of the transiently poor. Identifying the permanently poor requires a predictive equation based on a local definition of poverty and additional information on extenuating circumstances for each case. Tabular data are provided. (Author abstract modified).

PB83-123588 PC A07/MF A01
Urban Systems Research and Engineering, Inc., Cambridge, MA.
Community Residences for the Chronically Mentally Ill: A Sponsor's Guide to Development Planning.
18 Mar 81, 136p HUD-0002371
Contract HUD-H-5001-T02

This guidebook provides information to organizations considering sponsoring housing for chronically mentally ill people on project planning, site acquisition, facility design, and funding options. It focuses on group homes and independent living complexes (primarily apartments). The guidebook describes the range of disability levels exhibited by the chronically mentally ill and the types of environments that are most conducive to their rehabilitation. Although many of these people are currently housed in nursing homes or other semi - institutional settings where services are often inappropriate, community residences can be designed to accomodate various levels of disability and, through an integrated housing and service plan, help chronically mentally ill persons achieve their maximum functioning levels. Residential programs range from highly structured group homes with live - in staff to relatively independent apartment settings with no onsite supervision. Some programs are transitional (they limit the clients' length of stay), whereas others provide fairly permanent homes for clients. Community residences vary widely in the types of services they provide, the identity of the service provider, and the location of service delivery. Choosing a site for the community residence is potentially the most difficult aspect of development planning. Sponsors must consider accessibility to services, neighborhood characteristics, affordability, and other issues. Since neighborhood resistance may make development of the facility difficult, the guide offers a number of strategies for building community support. It also examines the residence's physical design in terms of what standards or codes will apply and what steps sponsors can take to ensure that the residence meets all of these requirements. Sponsors must decide whether to lease housing for use as a community residence or to purchase a property outright. This decision will rest on such factors as the type of properties available, the need for flexibility, and the sponsor's technical and financial resources. A list of funding options available to sponsors covers both capital development programs and leasing programs.

PB83-123596 PC A02/MF A01
Urban Systems Research and Engineering, Inc., Cambridge, MA.
Evaluation of the HUD/Health and Human Services (HHS) Demonstration Program for the Chronically Mentally Ill. Evaluation of the Early Experiences of Phase I of the HUD/HHS Demonstration: Executive Summary.
Final rept.
24 Dec 80, 23p HUD-0002372
Contract HUD-H-5001-T02

This report summarizes the results of the startup efforts of sites selected to participate in a demonstration program sponsored jointly by HUD and the Department of Health and Human Services (DHHS) to promote housing for chronically mentally ill people. The housing is provided through the linkage of HUD's Section 202 / 8 Direct Loan Program and State mental health agencies' support services, assisted by DHHS transitional funding. Production delays have plagued the demonstration activities. Almost 2 years after funds were awarded, only 4 of the 56 sponsors in phase I had operational programs. Delays were caused by sponsors' failure to acquire sites before funding, their difficulties in securing appropriate sites, HUD processing delays, and economic problems. Colorado sponsors adopted special strategies to overcome the problems of adapting the 202 program to the development of small projects by, for example, not undertaking substantial rehabilitation of buildings purchased for projects. Some States successfully assisted demonstration sponsors during the development process, and some did not. Most services are provided offsite, and most service programs are closely tailored to client disability levels. Few sponsors have had to establish new service affiliations as most are experienced mental health service providers. Most sponsors plan to admit clients with severe disabilities; the primary referral source will be the sponsors' own service programs. The report recommends that 202 processing be simplified for small - scale projects, that a formal cost analysis of the 202 program be conducted, that the "substandard of deteriorated" requirement for dwellings to be rehabilitated be waived, and that the State mental health agencies play a more active role in the demonstration's administrative design. The collaborative approach should be further developed, HUD might consider allocating a minimum amount of money for housing the chronically mentally ill each fiscal year, and HUD's role should be clarified. No references are cited.

PB83-123604 PC **A07**/MF **A01**
Urban Systems Research and Engineering, Inc., Cambridge, MA.
Evaluation of the HUD/Health and Human Services (HHS) Demonstration Program for the Chronically Mentally Ill. Evaluation of the Early Experiences of Phase I of the HUD/HHS Demonstration: Final Report.
24 Dec 80, 131p HUD-0002373
Contract HUD-H-5001-T02

This report evaluates the start - up efforts of sites selected in the HUD / Health and Human Services (HHS) Demonstration. The Demonstration Program is designed to promote housing for chronically mentally ill people. It describes and assesses the start - up experiences of Phase I sites with Section 202 / 8 processing procedures, the development of service plans, and the selection of clients to be served. The report is based on data gathered in 10 of the 14 Phase I participant States and from 31 of the 56 selected sponsors. Interviews were conducted with Demonstration participants in the 10 study States between January and March 1980, including State officials, sponsor staff, and HUD area office staff. Data were also elicited from various other sources. The report reviews and synthesizes the research findings presented in the earlier three reports and also incorporates more recent data on Phase I sponsor progress or program policies. In addition, the first phase is evaluated by examining reasons for the considerable delays during this phase, evaluating the Demonstration's administrative design, reviewing the results of Demonstration activities, and suggesting recommendations specific to the Demonstration's subsequent phases. Among recommendations are suggestions for (1) a formal cost analysis of the 202 Direct Loan Program as a financial vehicle to help HUD determine the feasibility of small project development under the 202 program and (2) permission to HUD Area Offices to relax the requirement that sites for substantial rehabilitation be in "substandard or deteriorated" condition. In addition, specific means through which stronger State - HUD linkages could be built to aid in the expansion of housing opportunities for the chronically mentally ill are delineated. Policy issues are discussed regarding the choice of funding vehicle and HUD's role in meeting the housing needs of the chronically mentally ill. Tables and footnotes are supplied.

PB83-123612 PC **A06**/MF **A01**
Human Services Research Inst., Boston, MA.
Housing, A Resource for Independent Living: A Research Agenda,
Valerie J. Bradley, and Mary Ann Allard. May 80, 124p HUD-0002374
Grant HUD-H-5048RG

This report proposes a short - and long - range research agenda for HUD regarding the housing and related needs of handicapped persons. The agenda presents six HUD objectives related to the needs of the handicapped and lists specific projects aimed at meeting these objectives. The first objective states that HUD should, as part of its ongoing mission, develop plans for the improvement and expansion of housing for handicapped persons. Next, it should ensure that its current programs are appropriate and responsive to the needs of handicapped persons and remove obstacles that constrain handicapped people's access to existing housing programs. HUD should also explore, develop, and encourage funding patterns that maximize the use of available resources by handicapped persons and determine appropriate interagency responsibilities for housing and related services to handicapped individuals. Finally, HUD should develop provider and management capabilities for the provision of housing to handicapped persons. Projects to be selected in relation to the above objectives are arranged under headings dealing with structural and environmental design, planning and information, program evaluation, financing and incentives, provision of services, constraints to housing development, consumer - related issues, training and technical assistance, and rural housing. Each specific priority project is described in terms of the background rationale and the proposed scope of work. Among the priorities are a recommended analysis of alternative strategies to finance startup costs of community - based housing for handicapped persons, an analysis and demonstration to determine the optimal funding packages for housing and related services for disabled persons in the community, and the development of strategies to eliminate zoning barriers. In addition, 21 second priority projects are briefly described. A briefing paper containing research suggestions generated by Human Services Research Institute interviews is appended.

PB83-123653 PC **A10**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Occasional Papers in Housing and Community Affairs. Volume 8.
1981, 220p HUD-0002379

This volume contains papers read at the concluding sessions of a HUD conference which provided a forum for a comprehensive presentation of technical findings from the Experimental Housing Allowance Program. Housing responses of low - income households and measurement of housing consumption are dealt with in a preceding volume. This collection focuses on search and mobility and market response to increased housing demand. Papers addressing the issue of mobility discuss the decision to move, as illuminated by evidence from the demand experiment, and the ways in which low - income households search for housing, with emphasis on racial differences. A disequilibrium model of housing search and residential mobility is presented, as is an analysis of mobility in the Seattle, Wash., and Denver, Colo., income maintenance experiments. Concerning market responses, the effects of housing allowances on housing prices are assessed. The final paper traces the shortrun response of housing markets to demand shifts. Summaries of conference discussions conclude each topical section. Tabular and graphic data are provided.

PB83-123729 PC **A04**/MF **A01**
Urban Inst., Washington, DC.
Modeling Alternative Housing Voucher Programs.
Final rept.,
Thomas Thibodeau, Anne Bergsman, and Gary Anderson. Mar 82, 66p HUD-0002386
Contract HUD-H-2882-TO19

This paper examines the impact of changes in the Nation's housing program on the population of eligible households, potential participants, and program costs. Alternative housing programs are examined at two points in time: 1983 and 1988. The data for this analysis are produced with the Urban Institute's Transfer Income (TRIM) computer simulation model. TRIM demographically and economically aged the March 1980 Current Population Survey (CPS) data file to 1983 and 1988. TRIM also estimated each household's transfer payments from the Supplemental Security Income Program, the Food Stamp Program, and the Aid to Families with Dependent Children Program. These data were then used as input data for a computer program that simulated a housing voucher program while varying assumptions on eligibility rules, payment formulas, the definition of income, and treatment of current participants. This paper reports the results of six simulations, with parameters selected by HUD. Results indicate that households' eligibility and subsidy levels, and hence program costs, are very sensitive to many program parameters that are currently excluded from housing legislation. Results also indicate that counting food stamps as income would have little impact on the size of the eligible population but would reduce the average subsidy by $60 per year in 1983. The procedures used to age the March 1980 data file are described, along with the housing voucher simulation model and simulation results. Tables and nine references are provided. The appendices contain more detailed descriptions of the variables used in the simulation model; the housing voucher simulation model, including a flowchart and a brief description of the program's subroutines; and simulation results. (Author abstract modified).

PB83-123737 PC **A05**/MF **A01**
RAND Corp., Santa Monica, CA.
Measuring Eligibility and Participation in the Housing Assistance Supply Experiment,
Grace M. Carter, and Steven L. Balch. Sep 81, 94p R-2780-HUD, HUD-0002387
Contract HUD-H-1789

This report estimates the size and composition of households in each of two metropolitan communities that participated in the Housing Assistance Supply Experiment; analyzes changes in that population over time, including flows of individual households into and out of eligibility; and combines the eligibility estimates with counts of enrollees and recipients to estimate rates of participation in the program for various types of households. The analysis results show that about one - fifth of the population could not afford the standard cost of adequate housing without spending more than one - fourth of their income, and at the same time meet the other eligibility requirements of the allowance program. Two life - cycle groups, single parents and elderly singles, were heavily overrepresented in the eligible pool. There were slight changes in the size and composition of eligible population's, size and composition over time due to demographic change in the population at large, modifications in social security payments, and unemployment shifts. However, substantial changes in the identity of eligible households occurred. From 1 year to another, less than three - quarters of the eligible households retained their eligibility and continued to be headed by the same persons. Of the newly eligible households, about one - third were newly formed by marriage or separation. During the program's first 2 years, the number of enrolled households grew rapidly, but by the third year it reached a steady state at about 40 percent of those eligible. Both enrollment and recipiency rates were highest among the subgroups that also had the highest eligibility rates: single parents and elderly singles. Minorities were much more likely to enroll than nonminorities. Differences between these findings and those of other housing allowance participation studies are reviewed. Tables, figures, notes, and 27 references are provided. Technical data are appended. (Author abstract modified).

PB83-123745 PC **A09**/MF **A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1979. United States and Regions. Part D: Housing Characteristics of Recent Movers.
Mar 82, 193p HUD-0002394

This report presents final detailed cross - tabulations on the housing characteristics of units occupied by "recent movers" from the 1979 Annual Housing Survey. Statistics are presented for the United States by inside and outside standard metropolitan statistical areas and each of the four geographic regions. Households that moved into their units during the 12 months prior to the interviews (held from September to December 1979) are classified as recent movers. Characteristics of the present units of recent movers are cross - tabulated by characteristics of the previous units. Specifically, tables present data on selected characteristics of the housing units; the income of families by housing unit purchase price, source of down payment, and amount of mortgage; tenure and location; units in structure; location by tenure and units in structure; age of head; presence of persons 65 years old and over; the number of bedrooms, plumbing facilities, persons per room; value and location of present property; and gross rent. The tabular material comprises the bulk of the volume. Appended are area classifications, explanations of subject characteristics, and sample questionnaires.

PB83-123752 PC **A19**/MF **A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1978. Housing Characteristics for Selected Metropolitan Areas: Cincinnati, Ohio-Ky.-Ind., Standard Metropolitan Statistical Area.
Mar 82, 442p HUD-0002406

This report presents statistics on housing and household characteristics from the 1978 - 1979 Annual Housing Survey conducted in the Cincinnati, Ohio, Kentucky, and Indiana Standard Metropolitan Statistical Area (SMSA's). Information is provided on the size and composition of the housing inventory, the occupants' characteristics, changes in the inventory resulting from new construction and from losses, the indicators of housing and neighborhood quality, and the characteristics of recent movers. Data are presented separately for "in central cities" and for "not in central cities." Selected housing characteristics are given for 1970, 1975, and 1978, and characteristics of housing units removed from the housing inventory are given for 1975. Statistics on housing and neighborhood quality, financial characteristics, general housing characteristics, and recent - mover households are broken down for black and Spanish heads of households. The 1978 survey indicates a net gain of 27,600 housing units for this SMSA from the 1975 estimate. About 5 percent of the total housing stock in the Cincinnati metropolitan area was constructed since the last survey in 1975. Table finding guides; a discussion of the source and reliability of the estimates; and area classifications, definitions and explanations of subject characteristics, and a facsimile of the survey questionnaire of 1978 are appended. Maps are included.

PB83-123760 PC **A18/MF A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1978. Housing Characteristics for Selected Metropolitan Areas: Columbus, Ohio, Standard Metropolitan Statistical Area.
Mar 82, 403p HUD-0002407

This report presents statistics on housing and household characteristics from the 1978 - 1979 Annual Housing Survey conducted in the Columbus, Ohio, Standard Metropolitan Statistical Area (SMSA). Information is presented on the size and compositions of the housing inventory, the occupants' characteristics, the changes in the inventory resulting from new construction and from losses, the indicators of housing and neighborhood quality, and recent movers' characteristics. Statistics are provided separately for "in central cities" and for "not in central cities." Data are presented on selected housing characteristics for 1978, 1975, and 1970 and on characteristics of housing units removed from the housing inventory for 1975. Data are broken down for black and Spanish heads of households. The 1978 survey points to a net gain of 20,200 housing units in this SMSA over the revised 1975 estimate. About 6 percent of the total housing stock in the Columbus metropolitan area was constructed since the last survey in 1975. Appendices include table finding guides; a discussion of the source and reliability of the estimates; and area classifications, definitions and explanations of subject characteristics, and a facsimile of the survey questionnaire of 1978. Maps are included.

PB83-123778 PC **A06/MF A01**
Residential Displacement in the U.S., 1970-1977,
Sandra J. Newman, and Michael S. Owen. 1981, 104p HUD-0002409
Grant HUD-H-5274SG

This study provides empirical evidence on the extent, nature, and effects of displacement moves out of urban areas during the 1970's. It is based on data from the Panel Study of Income Dynamics (PSID), a longitudinal study of families and individuals that began in 1968. Displacement cases were identified by recoding all instances of moves between 1970 and 1977 that the PSID, which is based on a national sample, had coded as "involuntary moves" into a detailed set of "type of involuntary move" codes. More than 600 cases of involuntary moves were evaluated for inclusion into the displacement category. Most involuntary moves were found to be nondisplacement moves. Displacement moves included the following categories: sale of unit, reoccupation by the landlord, demolition or condemnation of the property, condition of house or neighborhood, public sector displacement, and other displacement. Households most susceptible to displacement were found to be those with high housing cost burdens, short durations of occupancy, location close to the central city of a Standard Metropolitan Statistical Area, receiving welfare, and young household heads or heads with low levels of education. Lower income families were most susceptible to displacement. Displacement appears to have a significant effect on only a subset of outcomes. For example, displacement affects crowding, housing cost burden, and income status, but it does not seem to increase or decrease employment hours or the likelihood of welfare dependency. The effects of displacement also do not depend on the demographic or socioeconomic characteristics of the displaced. However, some examples demonstrate substantial negative effects of displacement for particular subgroups. Older displacees and the poor were found to be more crowded after displacment than those not displaced. Minorities who were displaced were also more likely to become welfare dependent than minorities who were not displaced. Footnotes, tables, and about 35 references are supplied. The study's methodology and supporting data are appended.

PB83-123794 PC **A19/MF A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1978. Housing Characteristics for Selected Metropolitan Areas: Newport News-Hampton, Va., Standard Metropolitan Statistical Area.
Mar 82, 431p HUD-0002413

This report presents housing characteristics for the Newport News - Hampton, Va., standard metropolitan statistical area (SMSA) taken from the 1978 - 79 Annual Housing Survey. The sample consisted of about 5,000 designated housing units. Separate data are shown for "in central cities," "not in central cities," and for the SMSA as a whole. Tables give data on general housing characteristics; indicators of housing and neighborhood quality; financial characteristics; recent mover households; and cross - tabulations of the indicators of housing and neighborhood quality by income, value, and gross rent. Data are also classified according to black household head and household head of Spanish origin. Maps and table - finding guides are provided. Appendices describe the geographic area classifications; define the subjects covered in the report; and present information on sample design, estimation, and data accuracy.

PB83-123851 PC **A05/MF A01**
Council of State Community Affairs Agencies, Washington, DC.
State Actions To Promote Affordable Housing.
Final rept.,
Marvin J. Tick, and John Sidor. Jan 82, 89p HUD-0002424
Grant HUD-H-5496SG

Based on a survey of 34 State community affairs agencies, this report profiles State actions to promote affordable housing. It is organized by topic and designed to show the variances in the types of State actions within a particular area. Examples are used to illustrate major categories of State action (e.g., codes and standards) and specific subtopics (e.g., energy codes). The topics covered include State actions that affect land supply and development (zoning and subdivision standards and regulations, permit procedures and fees, etc.), State financing actions (grant or loan programs, tax - exempt mortgage revenue bonds, etc.), State taxation / tax policy actions (renter rebates and tax abatements), codes and standards, labor issues, and State housing policy and assistance. Finally, State efforts to deal with condominium conversion and rent control are discussed. States considered that the following actions significantly promoted affordable housing: intervention in zoning and subdivision regulations, promotion of the supply of developable land, State land use policy, financial assistance, and structural codes. Affordable housing actions mentioned most frequently as possible future State activities were structural codes, promotion of the supply of land for residential development, financial assistance, and State intervention in permit procedures and fees, zoning regulations, and subdivision regulations. States report many actions in land supply and development to promote affordable housing, although only about one - third of State actions in this area were thought to be significant. Other significant State actions, conditions that influence State actions, and the results of a homebuilder survey are outlined. A State actions matrix, a discussion of the study methodology, and a list of participating State agencies are appended.

PB83-123950 PC **A05/MF A01**
RAND Corp., Santa Monica, CA.
Experimenting With Housing Allowances: Executive Summary. Housing Assistance Supply Experiment.
Final comprehensive rept.,
Ira S. Lowry. Apr 82, 92p RAND/R-2880-HUD, HUD-0002436
Contract HUD-H-1789

This report summarizes and interprets the findings of the Housing Assistance Supply Experiment conducted in Brown County, Wis., and St. Joseph County, Ind., between 1974 and 1980. In each county, a 10 - year allowance program was operated by a nonprofit housing allowance office (HAO) under contract to HUD and the local housing authority. During the first 5 years (the experimental period), enrollment was continuously open to all eligible households in the county. The HAO's dealt only with participating households, not landlords, builders, or mortgage lenders. The participants themselves were wholly responsible for finding their homes, negotiating rents and conditions of occupancy, and meeting their financial obligations. Housing quality was checked by periodic inspections of participants' dwellings and defects needing attention were reported to participants; arranging for repairs was their responsibility. Analysis of program and annual survey data showed that in the mature program, about a third of those who were currently eligible were currently receiving payments; about half of those who enrolled were then living in dwellings that did not meet the program's quality standards; and the likelihood of occupying standard housing increased from about 50 to 80 percent and preenrollment housing expense burdens were reduced from about 50 percent of gross income to about 30 percent with program participation. The program had little effect on the physical appearance or social composition of residential neighborhoods. Enrollees were able to meet program standards without much increase in expenditure because most housing defects were minor and easily repaired by participants. In general, the public approved of program tenets and operation. Notes, 11 references, 6 figures, and 25 tables are included. Selected publications are appended. (Author abstract modified).

PB83-123976 PC **A03/MF A01**
Citizens Housing and Planning Association of Greater Boston, Inc., MA.
Interjurisdictional Mobility and Fair Housing in the Section 8 Existing Housing Program and in a Housing Voucher Program,
William L. Holshouser. 05 Feb 82, 27p HUD-0002439

This paper, written in response to reports of positions adopted by or actively being considered by the President's Commission on Housing, raises issues and makes recommendations regarding implications of Commission positions on two important aspects of program performance: interjurisdictional mobility and fair housing. Based on data available from several programs, the paper notes that the Section 8 Existing Housing program and the Experimental Housing Allowance Program provide the best indications of how a voucher program might work and discusses problems with these programs and offers recommendations. Both were (or are) largely successful programs. Interjurisdictional mobility is a valid and important concern that should be addressed directly in a voucher program or in future modifications to the Section 8 Existing Housing program. It affects freedom of choice, program efficiency, outcome equity, potential improvement in housing quality for participants, and racial economic deconcentration. It is one cause of the Section 8 Existing housing program's high failure rate. Mobility and free choice in the marketplace are hindered by a delivery mechanism made up mostly of local public housing authorities (PHA's). At present there are many more participants in Section 8 Existing Housing who want to move across jurisdictional lines than are able to make such moves. Even with a delivery system using largely local PHA's interjurisdictional mobility can be enhanced by providing for regional coordination of certificate transfers and regional provision of information and services to participants. Discrimination, fear of discrimination, and other factors make it harder for minorities, female - headed households, and others to use the Section 8 Existing program. Much the same can be expected in a voucher program. Thus, active efforts to assure fair housing opportunities are essential to marketplace integrity. Maps, notes, and six references are given. (Author abstract modified).

PB83-123984 PC **A02/MF A01**
American Enterprise Inst. for Public Policy Research, Washington, DC.
Individual Housing Account: Inferences From the Canadian Experience,
John C. Weicher. 03 Feb 82, 14p HUD-0002440

This paper attempts to draw inferences based on Canadian experience about the cost and effect of an Individual Housing Account (IHA) in the United States, using information from the Canadian Registered Home Ownership Savings Plan (RHOSP) program. The RHOSP allows individual renters to deposit up to $1,000 per year in an account. These deposits are excluded from income for tax purposes, and the interest is also tax free. Any renter may establish an account, the accounts must be collapsed within 20 years, and the proceeds must be used to buy a home; otherwise, tax penalties are imposed. Over 500,000 people have these accounts. Based on an analysis of Canadian data transferred into comparable U.S. terms, the study concludes that there would be about 4.5 to 5 million IHA's, with a tax loss of around $2.1 to $2.8 billion annually, once the IHA reached a "steady state," perhaps 5 years after the program was enacted. Consideration of the most obvious differences between the two countries suggests that these figures are likely to be biased upward, if at all. These figures are within range of previous studies of the IHA. However, the evidence does not show that RHSOP has resulted in increased homeownership or housing production in Canada or that it has particularly strengthened the housing finance system. Notes are provided.

PB83-123992 PC **A03**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Community Planning and Neighborhood Studies.
Urban Homesteading.
Howard J. Sumka. 11 Jan 82, 27p HUD-0002441

The paper examines the types and success of single - family and multifamily homesteading in urban residential areas. Urban homesteading was introduced in the 1970's as a strategy to encourage the resettlement of declining neighborhoods in older northeastern cities. The idea of urban homesteading is to transfer publicly owned, abandoned property to individuals or families in exchange for their commitments to repair, occupy, and maintain the property. If successful, urban homesteading can achieve several related objectives: (1) decaying housing resources are conserved, (2) neighborhoods are revitalized and stabilized by removing blighting influences, and (3) standard housing is made available and homeownership is made possible for households of modest means at affordable prices. The Federal Urban Homesteading Program began as a demonstration in the fall of 1975 with 23 cities and now includes 94 cities. These cities have received about 5,500 HUD - owned single - family properties. Multifamily urban homesteading is broadly defined as the cooperative renovation, ownership, and management of a multifamily building by its residents. However, questions about the cost and efficiency of multifamily homesteading are not easily answered. Although many cities are reported to have some form of community - based, multifamily homesteading taking place, intensive activity is not widespread. In New York City, fewer than 50 such cooperative endeavors could be identified. Both multifamily and single - family homesteading remain potentially important mechanisms for bringing a substantial number of decaying dwelling units back into useful service. A list of urban homesteading cities is appended.

PB83-124032 PC **A02**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Regulation of Access for the Handicapped.
Deborah Greenstein. 04 Dec 81, 20p HUD-0002446

Several issues need to be addressed when considering the question of the Federal role in architectural barriers regulations. Included among these is the question of whether the Federal Government should issue regulations concerning accessibility and, if so, how far these regulations should go. Other important questions deal with how to implement the regulations; how to provide incentives for voluntary provision of accessibility; what standards of accessibility should be used; and how to achieve uniformity of standards within the Federal establishment and among the levels of government, the major model codes, and others involved in the accessibility movement. While not all 35 million disabled Americans would benefit directly from architectural accessibility, estimates show that as many as 9 million would, especially the 645,000 who are in wheelchairs. If Federal policy is to discontinue the direct support of subsidized new housing construction, low incomes will prevent many handicapped persons from being able to afford new accessible units provided in the market place. It is estimated that there are 50,000 - 60,000 accessible HUD units. HUD's minimum property standards also include accessibility requirements, based on voluntary compliance, which apply to HUD's insurance programs. The voluntary concensus standard (ANSI Standard A117.1) has served as the basis for laws in all 50 States, for the requirements in the 4 major model building codes, and for the standards developed by all Federal agencies. HUD research has demonstrated that barrier - free design need not be expensive if it is included in project design from the beginning. In most cases, it only adds about 1 percent to project cost. Options for accessibility regulations are discussed. Tables and 20 notes are included. (Author abstract modified).

PB83-124057 PC **A03**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Div. of Policy Studies.
Regulation of Condominium and Cooperative Conversions: Facts, Issues, and Options.
04 Dec 81, 37p HUD-0002450

Types of conversion regulations and their effects on the rental market are explored. The process of conversion of rental housing to condominiums and cooperatives has caused disruption for existing tenants and, in a few instances, adversely affected the supply of rental housing. From 1970 through 1979, about 1.3 percent of the Nation's rental stock was converted to ownership, mostly in metropolitan areas. By 1981, about one - half of the States had taken at least limited action to regulate conversions, and about one in five localities with conversions had adopted regulatory ordinances. Such regulations range widely from those designed to protect tenants of converted buildings, to those intended to protect buyers / owners of converted units, to those developed to preserve the supply of rental housing or of housing for persons of low and moderate income. The most common regulations are those requiring advance notice to tenants and granting them the right to purchase their units before they are offered for sale to the public. Also common are provisions designed to protect against unfair sales practices. At present, three States have adopted a version of the Uniform Condominium Act, developed by the National Conference of Commissioners on Uniform Laws as a model for comprehensive State condominium statutes. Arguments for and against condominium regulation are discussed. The President's Commission on Housing may wish to consider options about the extent to which rental conversions should be regulated by government, the appropriate division of regulatory responsibility among levels of government, and alternatives to regulation that could achieve the same ends. Footnotes are provided. (Author abstract modified).

PB83-124073 PC **A03**/MF **A01**
Department of Housing and Urban Development, Washington, DC.
Housing Under the Davis-Bacon Act.
Nov 81, 27p HUD-0002452

This paper examines the impact of the Davis - Bacon Act on federally assisted housing. The Davis - Bacon Act requires the Federal Government to pay the prevailing wage rate on all assisted construction. Implementation of the act's regulations has had the effect of imposing union wages where nonunion rates would have otherwise occurred. Estimates of impact range from a couple of percentage points to 25 percent of development costs. The impact on housing construction appears to be proportionately less than on other types of construction. The act raises labor costs on Federal construction because the regulations and the administration of them overestimate the minimum wage necessary to hire construction labor. Administration of the act also requires Government expenditures for issuing determinations and policing compliance. Compliance costs and difficulties compose the third problem. Four options to alleviate this problem are considered. Total repeal of the act saves the maximum amount but eliminates any wage protection. Selective repeal removes housing construction from the act and affects a relatively small number of workers. Regulatory reform can save some of the costs imposed by inaccurate determinations, but administrative costs remain. No action creates the least controversy while depending on other forces to effect change. (Author abstract modified).

PB83-124115 PC **A04**/MF **A01**
Department of Agriculture, Washington, DC.
Housing Rural America.
25 Nov 81, 55p HUD-0002456

This report highlights some of the unique characteristics of housing problems in rural America. The policy framework developed by the President's Commission on Housing in its interim report is followed in examining housing availability, adequacy, and affordability from a rural perspective. Differences and similarities between metropolitan and nonmetropolitan areas are highlighted. One third of the Nation's housing is in nonmetropolitan areas. The South has 43.7 percent of nonmetropolitan housing, followed by north central (35.2 percent), eastern (21.8 percent), and western (21.4 percent) regions. Homeownership is higher in nonmetropolitan areas, and 60 percent of the 3.6 million occupied mobile homes are in such areas. In rural areas, 15 percent of the owners and 36 percent of the renters who occupy adequate housing spend more than 30 percent of their income to do so. Compared to metropolitan units, rural units are twice as likely to have kitchen and heating defects and three times as likely to have inadequate sewage systems. The primary Federal housing credit agency in rural areas is the Farmers Home Administration (FmHA). Three programs account for 95 percent of FmHA's expenditures for housing: (1) Sec. 502, low and moderate income housing loans; (2) Sec. 515, rural rental housing loans; and (3) Sec. 521, rental assistance. Foreclosures on FmHA loans are less than .5 percent of all housing loans. HUD spends 13.2 percent of its funds in nonmetropolitan areas. However, the percentage of Sec. 203 Federal Housing Administration loans in nonmetropolitan areas has decreased. Compared with other programs, FmHA serves the lowest income households on average and finances the lowest priced housing. Two proposed housing policies, consumer assistance grants and individual housing accounts, are reviewed in terms of their likely effect on rural areas. Maps, tables, and appended related material are provided. (Author abstract modified).

PB83-124123 PC **A04**/MF **A01**
Harvard-MIT Joint Center for Urban Studies, Cambridge, MA.
Trends in Housing and Demographic Factors.
Feb 82, 74p HUD-0002457

This report examines some of the key demographic trends and, on the basis of these trends, projects housing demand through the year 2,000. It also discusses the interaction between demographic forces and such structural features as utilization of the existing stock, regulation, the role of manufactured housing, and the share of capital going into housing. Based on detailed analysis of individual population groups, the report projects that the rate of household formation through the mid - 1980's will run about 1.3 to 1.5 million new households a year. However, by the year 2,000, the rate will decline to 800,000 per year, which will be associated with slower growth in housing demands. The relatively narrow gap between housing starts and increases in households is projected to continue in coming years. The demand for additional rental units will begin to fall off by the mid - 1980's, and by the end of the century, will decline to negligible levels. The demand for additional rental units is projected to drop to about 200,000 per year by 1990 and then to fall to near zero by the year 2,000. (In the late 1970's, about 400,000 rental units per year were being added.) The demand for owned units is project to fall from 1.1 to 1.2 million units per year in the 1970's to a low of 800,000 per year by the end of the century. The significance of the existing housing stock in meeting future demand for housing is discussed in reference to rehabilitation, remodeling, and conversion and in terms of public housing. The impact of regulations on the direct costs of producing homes is noted, and obstacles that have limited the use of manufactured homes in meeting conventional housing needs are delineated. Tables, graphs, maps, footnotes, and an appended technical note are provided.

PB83-124149 PC **A25**/MF **A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1978. Housing Characteristics for Selected Metropolitan Areas: New Orleans, La., Standard Metropolitan Statistical Area.
Apr 82, 600p HUD-0002461

Statistics on housing and household characteristics are presented from the 1978 - 79 annual housing survey conducted in the New Orleans, La., standard metropolitan statistical area. The area was represented by a sample of about 5,000 designated housing units. The sample was selected from units enumerated in the 1970 census and updated to include units constructed since 1970. Data are given for all races and separately for black and Spanish heads of households. Data cover characteristics of the housing inventory for 1978, 1975, and 1970; financial characteristics; selected characteristics of new housing units and of year - round vacant housing units; occupancy and utilization characteristics and services available, failures in plumbing, and selected neighborhood and structural characteristics. Also given are income of families in owner - occupied and renter - occupied housing units, value of owner - occupied housing units in 1978, and gross rent of renter - occupied units in 1978. Tenure and location characteristics, demographic data of housing occupants, and other related data are provided. Maps and table finding guides are included. Appendixes describe geographic area classifications and present information on sample design, estimation, and accuracy of the data.

PB83-124156 PC **A04**/MF **A01**
RAND Corp., Santa Monica, CA.

User's Guide to Housing Assistance Supply Experiment (HASE) Data, Volume 3: The Program Files,
Ann W. Wang. Apr 82, 54p RAND/R-2692/3-HUD, HUD-0002462
Contract HUD-H-1789

This report provides guidance for understanding and using eight research files that contain administrative data compiled in the Housing Assistance Supply Experiment (HASE), which was conducted to test the effectiveness of direct cash allowances to help low - income households maintain decent housing. From 1974 through 1979, HASE supervised a housing allowance program in Brown County, Wis., and in St. Joseph County, Ind., and studied the program's effects on the local housing market. The four program files for each site contain data gathered during the 5 - year program period on the characteristics of clients' households, the features and quality of their housing, and their transactions with the allowance program. The information covers the age, sex, and race of all household members; the household's assets, income, and expenses; and the dwellings facilities, room features, interior and exterior characteristics, habitability, condition, and size for its occupants. Information is also included on household changes over time, the client's history with the program, suspensions and reauthorizations of allowance payments, and exceptional payment adjustments. The files can be used to obtain program statistics, to study changes in clients' housing over time, and to obtain both detailed and cursory views of the entire process. Suggestions on how to use the files and how to choose and link records for analysis are given, along with a description of procedural changes that affect the data and data problems of which the file user should be aware. An annotated bibliography listing 32 sources on HASE and appendices discussing variables contained in the files are provided.

PB83-124180 PC **A19/MF A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1978. Housing Characteristics for Selected Metropolitan Areas: Rochester, N.Y., Standard Metropolitan Statistical Area.
Apr 82, 430p HUD-0002470

This annual housing survey for 1978 - 79 presents selected housing characteristics for the Standard Metropolitan Statistical Area (SMSA) of Rochester, N.Y. The report provides current information on the size and composition of the housing inventory, the characteristics of its occupants, the changes in the inventory resulting from new construction and from losses, the indicators of housing and neighborhood quality, and the characteristics of recent movers. The information for the survey was collected by personal interview from April 1978 through March 1979. This report on Rochester, N.Y., is one of 15 issued for each of the SMSA's surveyed. It consists of five parts: statistics on general housing characteristics, indicators of housing and neighborhood quality, financial characteristics, recent mover households, and financial characteristics cross - classified by indicators of housing and neighborhood quality. The data on Rochester, N.Y. were obtained from a sample of about 5,000 designated housing units which was divided between the central city and the balance of the SMSA based on the proportionate distribution of all housing units in the entire SMSA. The bulk of the volume comprises tabular data.

PB83-124297 PC **A02/MF A01**
Department of Housing and Urban Development, Washington, DC. Office of Economic Affairs.
Redesigning the Annual Housing Survey: Policy Considerations,
Kathryn P. Nelson, and Duane T. McGough. Aug 80, 16p HUD-0002581

This paper summarizes the policy issues and related data needs considered important in current thinking about the forthcoming redesign of the Annual Housing Survey, and their implications for the redesigned national and metropolitan area samples. Two national samples of approximately 60,000 housing units each will be selected and rotated, with 1 surveyed in odd years, the other in even years. Core data will be processed as quickly as possible without longitudinal links to give current annual data on housing need, costs, and availability. Complete data for each household subsequently will be longitudinally linked on a biennial basis. Geography on the public use longitudinal tapes will be similar but not identical for both samples, so that they may be merged for analyses requiring larger sample size. The costs and advantages of oversampling low - income households or low - value housing units, rural units (as at present), and / or new construction are being considered. Based on the assumption that it is possible to gain "extra" sampling units by merging the national and Standard Metropolitan Statistical Area (SMSA) samples and by reducing the sample size currently used for the 12 largest SMSA samples, the redesign will survey as many SMSA's as possible within the sample size restraints imposed by key statistics over a 4 - year cycle. Thus, the redesign will include more than 60 SMSA's with populations over 250,000, selected to provide balance among HUD regions and diversity of housing market types. Eight references are supplied. (Author abstract modified).

PB83-124305 PC **A07/MF A01**
RAND Corp., Santa Monica, CA.
Housing Allowance Program Administration: Findings From the Supply Experiment. Housing Assistance Supply Experiment,
G. Thomas Kingsley, Sheila Nataraj Kirby, and W. Eugene Rizor. May 82, 129p RAND/N-1846-HUD, HUD-0002582
Contract HUD-H-1789

This report synthesizes the findings of other studies of program administration in the Housing Assistance Supply Experiment, particularly those on administrative costs (Kingsley and Schlegel, 1979 and 1982) and eligibility certification (Rizor, forthcoming). It also presents new material evaluating alternative approaches to performing the various administrative functions required in a housing allowance program. Housing allowance programs were established in Brown County, Wis., and St. Joseph County, Ind. The programs were administrered by Housing Allowance Offices (HAO's), which are nonprofit corporations. In their first 5 years, the HAO's enrolled 29,800 households and disbursed 428,300 monthly allowance payment checks to those who met program housing requirements. The HAO's performed four functions: outreach, eligibility certification (or enrollment) and recertification, housing certification and recertification, and payments operation. The effectiveness and efficiency of program administration at the two sites is reviewed and factors that influenced performance are examined. Based on this analysis, implications are explored for regular operating programs, both for a national housing allowance program and for other programs with similar functions. The review covers July 1974 through June 1979 in Brown County and April 1975 through March 1980 in St. Joseph County. The report concludes that successful administration was due to the limited nature of HAO administrative functions and the HAOs' implementation of a series of management techniques (formal training programs, intensive quality control, reliance on management information systems, and accounting systems that relate costs to output). Figures, tables, footnotes, about 30 references, and appended standards for the Brown County program are supplied. (Author abstract modified).

PB83-124313 PC **A04/MF A01**
RAND Corp., Santa Monica, CA.
Consumption Increases Caused By Housing Assistance Programs. Housing Assistance Supply Experiment,
C. Peter Rydell, and John E. Mulford. Apr 82, 60p RAND/R-2809-HUD, HUD-0002583
Contract HUD-H-1789

This report compares and contrasts three methods of providing housing assistance to low - income renters: the public housing program, which constructs housing for eligible tenants; the housing allowance program, which supplements eligible tenants' incomes on condition that they live in housing that meets minimum standards; and unrestricted cash grants, which unconditionally supplement eligible tenants' incomes. Each program entails costs that exceed its benefits. Total program costs equal the subsidies that pay for housing and nonhousing increases plus nonsubsidy expenses. Nonsubsidy expenses include the costs of conducting eligibility tests in all three programs and of enforcing the housing standards in the housing allowance and public housing programs; they also include above - market development costs in the public housing program. The two ratios by which this report evaluates the alternate programs are gained by dividing housing and nonhousing consumption increases by total program costs: dollars of increased housing consumption per program dollar and dollars of increased nonhousing consumption per program dollar. The finding is that if alternative programs serve the same population, impose the same housing standards, and provide the same total subsidy to participants, the allowance program will perform unambiguously better than public housing and conditionally better than cash grants. The choice between housing allowances and unrestricted cash grants depends on the relative importance given housing and nonhousing consumption increases. The allowance program is preferable to unrestricted cash grants if double the housing assistance is more important than a one - sixth cut in nonhousing assistance. Tables, figures, about 25 references, and appended technical material are included. (Author abstract modified).

PB83-124339 PC **A04/MF A01**
Department of Housing and Urban Development, Washington, DC. Div. of Housing and Demographic Analysis.
Equality in Subsidized Housing,
Paul Burke. Sep 81, 51p HUD-0002592

This in - house study examined how thoroughly HUD's housing subsidy programs cover the eligible population. Administrative statistics gathered for 1979 show how many households of every type HUD subsidizes, and the Annual Housing Survey for 1979 shows how many eligible. Therefore, the fraction of every household type (households with children, minorities, elderly) served can be calculated. The paper shows results separately for several household types: single - parent; two - parent; households with no children; with 1 - 3 children; and with 4 or more children. The study concentrates on incomes below the limit for the Section 8 Housing Assistance Payments Program. Four major subsidy programs are analyzed: Public Housing, Section 236 Rental Assistance, Section 8 Housing Assistance Payments, and Rent Supplements. Coverage is best for households from 10 to 30 percent of median income and particularly good for large one - parent households. It is almost as good for small one - parent households. Coverage of blacks is particularly good; coverage of whites and Hispanics is less so. However, the most significant finding is that at lower incomes, under 10 percent of median income, coverage is very poor. There appear to be households at this income level who cannot deal with society, and thus provide a classic economic justification for in - kind transfer programs, but who have not been successfully served by HUD's in - kind programs. Maps, graphs, 10 references, 6 footnotes, and data tables are supplied. (Author abstract modified).

PB83-124388 PC **A04/MF A01**
Council of State Community Affairs Agencies, Washington, DC.
State Actions for Affordable Housing,
John Sidor, and Marvin Tick. Jul 82, 53p HUD-0002638
Grant HUD-H-5496SG

State actions for affordable housing focus on encouraging an increase in the housing supply. Many States have begun to identify housing problems and to formulate programs by initiating housing cost conferences and housing needs and policy analyses and by providing cost-cutting awards and demonstrations and information and technical assistance. Other States have taken measures that affect the land and site improvement costs of residential developments. These efforts have been relatively modest but offer some important starting points for badly needed State actions in this area. Still other States have reduced housing costs by reassuming their authority to regulate building materials and construction techniques. They have supplanted out-of-date and often conflicting local codes that called for unnecessarily expensive building materials and technologies. To date, 25 States have adopted some form of statewide building code covering structural, fire, electrical, and other plumbing mechanical standards in order to ensure safer and more cost - efficient building. Others have established modular housing and rehabilitation codes. Many States have engaged in housing finance activity; the article highlights these actions in housing construction, residential rehabilitation, homeownership and rental assistance, mortgage supply and pension funds, and insurance and financial institutions. Finally, the article presents an overview of specialized State tax incentives in housing construction and rehabilitation tax abatement and manufactured and modular housing real property taxation. Data were gathered from 33 States responding to a questionnaire, from 13 case studies, and from field visits to 4 States. A summary matrix of State affordable

housing actions is provided, and a list of responding agencies and contacts is appended.

PB83-124396 PC **A05**/MF **A01**
New Jersey Dept. of Community Affairs, Trenton.
Affordable Housing Handbook.
30 Jun 82, 76p HUD-0002686
Prepared in cooperation with the Tri-State Regional Planning Commission,New York.

The handbook represents an effort by New Jersey to develop a strategy for promoting the increased production of affordable housing. It emphasizes construction cost factors in housing delivery, as well as attitudinal constraints to the development of more affordable housing, negative attitudes being often founded on the belief that such housing would alter the community's existing character. Local housing coalitions should be formed to address the affordability issue; they should include builders and building trade unions, bank representatives, local officials, and concerned citizens. They should advocate strategies to reduce land costs, including landbanking, conditional or incentive zoning, rehabilitation or reuse of land, leased land, and eminent domain or condemnation. Mechanisms that contribute to a reduction in land improvement costs involve clustering and planned unit development, improvement bonds, and direct public payments. Construction costs can be reduced by building smaller, simpler units (mobile homes, modular housing, prefab homes); building faster through new building technologies (optimum value engineering); and considering reuse or higher use of existing structures (home conversion, adaptive reuse). The cost of financing a home can be reduced through downpayment assistance, mortgage insurance, interest reduction, and lease - purchase options. Tables, a few photographs, and about 24 references are supplied.

PB83-124404 PC **A02**/MF **A01**
Academy for Contemporary Problems, Columbus, OH.
Affordable Housing: Local Techniques That Work.
May 81, 9p HUD-0002692

The findings of five recent housing cost demonstration projects indicate that local governments can significantly reduce single - family housing production costs by providing flexibility in development codes and decreasing the processing time required to obtain development approvals. There is evidence that local development regulations and the time that it takes to administer them contribute to the rapidly escalating cost of new housing. To show how housing costs could be reduced by modifying local government regulations (zoning, subdivision regulations, and building codes) and reducing processing time, HUD embarked on housing cost reduction demonstrations in Hayward and Orange County, Calif.; Allegheny County, Pa.; Shreveport, La.; and Las Vegas, Nev. Builders and developers for all five projects estimate that they have achieved or expect to achieve per-unit cost reductions of 20 to 33 percent below the price of comparable housing in their communities. Nearly 90 percent of the Hayward cost savings were related to accelerated processing time. Both the Shreveport and Orange County projects achieved the largest proportion of savings through increased densities. Primary cost reductions in Allegheny County were in the onsite and offsite improvements. Highlights of the demonstration programs and of techniques local governments can use to reduce housing costs (more compact development, public - private partnerships) are outlined.

PB83-125120 PC **A99**/MF **A01**
Vanderbilt Univ., Nashville, TN.
Potential Ecological/Geological Natural Landmarks on the Interior Low Plateaus.
Final rept.,
Elsie Quarterman, and Richard L. Powell. 30 Apr 78, 741p
Contract NPS-CX-1200-6-N015

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the ecological and/or geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 177 areas of ecologic and geologic significance throughout the Interior Low Plateaus natural region which includes northern Alabama, central Tennessee and Kentucky, and southern portions of Indiana and Ohio. Sites are described, evaluated, and given a priority rating based on their representation of ecologic and geologic themes characteristic of the region.

PB83-125138 PC **A19**/MF **A01**
Louisiana State Univ., Baton Rouge.
A Survey of Potential National Natural Landmarks, Geologic Themes, of the Mississippi Alluvial Plain Sub-Region of the Gulf Coastal Plain.
Final rept.,
Richard Kesel, and John Armon. Apr 82, 430p
Contract NPS-CX-0001-1-0058
Prepared in cooperation with Memphis State Univ., TN.Color illustrations reproduced in black and white.

This study is one of a series of 61 which cover the natural regions of the United States. Each study describes the geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report discusses the geologic history and features of the Mississippi Alluvial Plain (the middle section of the Gulf Coastal Plain Natural Region) and evaluates 88 sites.

PB83-854505 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Quality of Life: Housing Aspects. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 124p
Supersedes PB81-856015.

This bibliography contains citations concerning housing studies and statistical analyses relating the quantity, quality, and availability of both public and private housing to quality of life for various economic groups. Public housing management is excluded. (This updated bibliography contains 88 citations, 35 of which are new entries to the previous edition.)

6. BIOLOGICAL AND MEDICAL SCIENCES

6A. Biochemistry

PATENT-4 338 466 Not available NTIS
Department of the Navy, Washington, DC.
Prostaglandin Analogs and Process of Preparation Thereof.
Patent,
George L. Nelson. Filed 2 Apr 81, patented 6 Jul 82, 7p AD-D009 729/5, PAT-APPL-6-250 366
Supersedes PAT-APPL-6-250 366.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

Prostaglandin analogs and process for the preparation thereof as precursors for the synthesis of oligomeric mixtures exhibiting biological activity for protection of oxidative phosphorylation of degraded mitochondria. The analogs have the general formula: synthesized by O-alkylating a 2-alkylcyclopentane-1,3- dione to form an enot ether, reacting the ether with CH2=CHMgBr to form a vinyl, oxidizing the vinyl with OsO4 and NaIO4 to form an aldehyde, and reacting the aldehyde with a sodium salt of dimethyl (2-oxoalkyl)phosphonate.

PB82-922913 PC**$7.25**/MF**$3.00**
National Cancer Inst., Bethesda, MD. International Cancer Research Data Bank.
Phorbol Ester Action in Cell Culture.
Oncology overview.
Oct 82, 150p NCI/ICRDB/OK-82/13

Oncology Overviews are a service of the International Cancer Research Data Bank (ICRDB) Program of the National Cancer Institute, intended to facilitate and promote the exchange of information between cancer scientists by keeping them aware of literature related to their research being published by other laboratories throughout the world. Each Oncology Overview represents a survey of the literature associated with a selected area of cancer research. It contains abstracts of articles which have been selected and organized by researchers associated with the field. Contents: The effects of phorbol esters on DNA synthesis and DNA repair; The effects of phorbol esters on cell membranes, prostaglandin metabolism and cellular transport mechanisms; The specific binding of phorbol esters to membrane receptors and other cellular components; The induction of plasminogen activator by phorbol esters; The induction of ornithine decarboxylase activity by phorbol esters;The effects of phorbol esters on other biochemical aspects of cell cultures; The effects of phorbol esters on growth factor interactions with cells in culture; The metabolism of phorbol esters in cell cultures; The modification by retinoids of phorbol ester action in cell cultures; The effects of phorbol esters on immunocompetent cells, in vitro; The effects of phorbol esters on cell-virus interactions; The effects of phorbol esters on cell transformations; The effects of phorbol esters on mutation and sister chromatid exchange frequencies; The effects of phorbol esters on cell differentiation; The effects of phorbol esters on cell proliferation; Reviews of the effects of phorbol esters in cell cultures.

6C. Biology

PAT-APPL-6-325 076 PC **A02**/MF **A01**
Department of Agriculture, Washington, DC.
Vase Life Extender for Cut Flowers.
Patent Application,
Chien Y. Wang, and James E. Baker. Filed 25 Nov 81, 7p PB83-101469
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

This invention relates to a method and substances for delaying senescence and extending the vase life of cut flowers and, more particularly, to a method and substance for delaying senescence and extending the vase life of carnations.

PB83-114074 PC**$11.00**/MF**$11.00**
RHM Research Ltd., High Wycombe (England). Lord Rank Research Centre
Comparison of Culture Media for Enumeration of Moulds and Yeasts.
G. F. Woods. c1982, 19p B-185

Various antibiotic-containing media for the enumeration of yeasts and molds in foods have been compared. The ability of media to suppress bacterial growth and to prevent excessive growth of fungal colonies were two of the main factors investigated. It was concluded that Rose Bengal Chloramphenicol Agar is the medium of choice for samples heavily contaminated with molds. Malt Extract Agar containing oxytetracycline is recommended for samples where the main concern is enumeration of yeasts. (Copyright (c) by RHM Research Ltd., 1982.)

PB83-116855 PC **A04**/MF **A01**
Alaska Sea Grant Coll. Program, Fairbanks.
Alaska Underutilized Species. Volume II: Octopus,
J. R. Wilson, and Abby H. Gorham. May 82, 67p
ASG-82-3, NOAA-82091506
Grant NA81AA-D-0009
See also Volume 1, PB82-192238.

Contents: Octopus harvesting; Octopus processing; The feasibility of harvesting octopus; World trade of octopus.

PB83-117754 PC **A18**/MF **A01**
Intermountain Forest and Range Experiment Station, Ogden, UT.

A Survey of Potential Ecological Natural Landmarks of the Northern Rocky Mountains.
Final rept.,
Janet L. Johnson, and Robert D. Pfister. Jul 81, 416p
Contract HCRS-C9211(78)

This study is one of a series of 61 which cover the natural regions of the United States, defined largely be Fenneman (1928). Each study describes the ecological and/or geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 155 sites of ecological significance in the Northern Rocky Mountains natural region, including areas in Idaho, Montana, and Washington.

PB83-120089 PC **A04/MF A01**
Central Inst. of Medicinal and Aromatic Plants, Lucknow (India).
Current Research on Medicinal and Aromatic Plants, Volume 3, Number 3, July-September, 1981.
Quarterly pub.
c1981, 75p

Current Research on Medicinal and Aromatic Plants is a quarterly abstracting periodical. This journal carries abstracts with full bibliographical details of the latest research and development publication from all over the world on the following subjects: Agronomy, Genetics and Plant Breeding; Physiology and Biochemistry, Phytopathology, Entomology, Botany and Pharmacognosy, Medicinal Plants Chemistry, Essential Oil Chemistry, and Processing Technology. The CROMAP also notices market-trends, requirements of the industry, new books and periodicals, and carries author and subject index.

PB83-120097 PC **A04/MF A01**
Central Inst. of Medicinal and Aromatic Plants, Lucknow (India).
Current Research on Medicinal and Aromatic Plants, Volume 3, Number 4, October-December, 1981.
Quarterly pub.
c1981, 67p

Current Research on Medicinal and Aromatic Plants is a quarterly abstracting periodical. This journal carries abstracts with full bibliographical details of the latest research and development publication from all over the world on the following subjects: Agronomy, Genetics and Plant Breeding; Physiology and Biochemistry; Phytopathology, Entomology, Botany and Pharmacognosy, Medicinal Plants Chemistry, Essential Oil Chemistry, and Processing Technology. The CROMAP also notices Market-trends, requirements of the industry, new books & periodicals, and carries author index & subject index.

PB83-120303 PC **A09/MF A01**
Texas A and M Univ., College Station. Sea Grant Coll. Program.
Aquaculture: Public Health, Regulatory and Management Aspects. Proceedings of the 6th U.S. Food and Drug Administration Science Symposium on Aquaculture Held at New Orleans, Louisiana on February 12-14, 1980.
Jul 82, 189p TMMU-SG-82-119, NOAA-82091403
Grant NA81AA-D-00092

Contents: Immunological approaches to understanding marine toxins; Paralytic shellfish poisoning in shellfish aquaculture: The state regulatory problem; Preliminary observations on paralytic shellfish poisoning in Central Puget Sound; Shellfish aquaculture and paralytic shellfish poisoning; Progress of shellfish toxin research; Implications of toxic resting cysts for aquaculture; The ocean has its Bezoar, too; Chemotherapy and chemoprophylaxis for control of bacterial diseases of fish; The secretory immune system in fish; An overview of recent advances; Principles of control of diseases of fish and shellfish; Fate and transport of viruses in marine waters; Accumulation and persistence of enteroviruses in blue crabs -- Potential microbiological problems associated with the use of human and animal wastes as a food supplement in aquaculture; Diseases acquired by eating fish and shellfish in the United States; CNP in fish, shellfish, and seawater in Tokyo Bay; Selective breeding programs and genetics as likely impacts on future aquaculture production systems and regulation of aquaculture; The role of the food and drug administration in the approval of new animal drugs; A balanced governmental role in aquaculture.

PB83-125203 PC **A05/MF A01**
Idaho Water and Energy Resources Research Inst., Moscow.
An Applied Coupled Simulation-Optimization Model of Water Use Efficiency in Intensive Fish Culture Systems.
Technical completion rept.,
George W. Klontz. Mar 82, 100p W83,-00617, OWRT-A-063-IDA(1)
Contract DI-14-34-0001-0114

A bioenergetics modeling approach is presented which links the quantitative effects of the biotic and abiotic dependencies of aquaculture systems operation which impact on the allowable growth rate of the fish. The reported computer-implemented mathematical model addresses one of the significant aquaculture systems management limitations, that of production forecasting. The model predicts allowable growth rates and systems production. The conceptual framework of the model is not only applicable to the fish species (rainbow trout) from which it was developed, but is applicable to all aquaculture systems. Considered are: water characteristics, pond design, nutrition, waste products, feeding rates, and fish growth and activity. Use of the model in aquaculture operations for production forecasting would enhance operational efficiency and profit.

PB83-125385 PC **A21/MF A01**
Western Michigan Univ., Kalamazoo.
Workshop on the Role of Earthworms in the Stabilization of Organic Residues. Volume II: Bibliography (Held on April 9-12, 1980, Kalamazoo, Michigan),
Diane D. Worden. c1981, 489p ISBN-0-939294-08-7, NSF/CEE-81105
Grant NSF-OPA79-19672
Library of Congress catalog card no. 81-65289.

This bibliography contains 3,036 citations of documents dealing with earthworms. Citations are included which deal with a wide variety of segmented worms as well as parasitic, non-segmented worms, marine worms, and leeches. Nematodes and microorganisms which impact annelids are also cited. A cumulative subject index is provided.

PB83-125674 PC **A06/MF A01**
Great Smoky Mountains National Park, Gatlinburg, TN. Uplands Field Research Lab.
Checklist of Fungi of the Great Smoky Mountains National Park,
Ronald H. Petersen. 1978, 107p MANAGEMENT-29
Prepared in cooperation with Tennessee Univ., Knoxville.

This report lists a total of 2,198 species of fungi from Great Smoky Mountains National Park, representing a total of 482 genera. The bulk of the list was originally compiled and published by Dr. Lexemuel Ray Hesler in 1937, with periodic updates, additions and revisions up to 1962, when Hesler listed a total of 1,975 species from the park. This report updates this 1962 list by including 223 new species.

6D. Bionics

PB83-115642 PC **A08/MF A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
An Overview of Computer Vision,
William B. Gevarter. Sep 82, 170p NBSIR-82-2582
Sponsored in part by National Aeronautics and Space Administration, Washington, DC.

This report provides on overview of computer vision. The emphasis is on image understanding and scene analysis, though pertinent aspects of pattern recognition are treated. Image processing for sensor correction, rectification, image enhancement, etc., is not covered. This report reviews the basic approach to computer vision systems, the techniques utilized, applications, the current existing systems and state-of-the-art, issues and research requirements, who is doing it and who is funding it, and finally future trends and expectations. The intent is to provide an overall perspective of this vital field with its many participants, that will be useful to engineering and research managers, potential users and others who will be impacted by this field as it unfolds.

6E. Clinical Medicine

HRP-0904353/0 CP **T02**
Bureau of Health Professions, Hyattsville, MD. Div. of Health Professions Analysis.
Bureau of Health Professions Area Resource File (ARF) Tape.
Data file,
Carol A. Semyan, and Roger B. Cole. Jul 82, mag tape HRA/DF-83/001
Supersedes HRA-0904031.
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions. Price includes documentation, HRP-0904354.

The Bureau of Health Professions' Area Resource File is a county-unit database with over 3,000 data elements for each county in the U.S., with the exception of Alaska for which there is a State total, and certain Independent Cities which have been combined into their appropriate counties. Altogether, there are a total of 3,077 records on the file. The purpose of the ARF is to summarize data from many sources into a single file to facilitate health manpower analysis. The data elements include in part: (1) County descriptor (Names, Fips, HSA, PSRO, SMSA, SEA, BEA, city size, shortage area designation, etc., codes); (2) Health Professions data (M.D., DDS, Veterinarians, Pharmacists, Optometrists Podiatrists, R.N., L.P.N., and Dental Hygienists); (3) Health Facility data (hospital size, type, utilization, and staffing and services; Nursing home data); (4) Population data (Size, composition, employment, housing, natality, mortality by cause, by sex and race, and by age; crime data); (5) Health Training data (training programs, enrollments, and graduates by type); (6) Expenditure data (Hospital expenditures, Medicare enrollments, and reimbursements, emdicare prevailing charge data); (7) Economic data (Total, per capita, and median income; income distribution, and AFDC recipients); (8) Environment data (Land area, large animal population, elevation, latitude and longitude of population centroid, water hardness index, and climate data).

HRP-0904354/8 PC **A08/MF A01**
Applied Management Sciences, Inc., Silver Spring, MD.
Bureau of Health Professions Area Resource File (ARF). User Documentation and Technical Documentation.
Quartery rept.
Jul 82, 168p HRA/DF-83/001A
Supersedes HRP-0904032. For system on magnetic tape, see HRP-0904353.

The Area Resource File (ARF) is a county-based data file, summarizing secondary data from a wide variety of sources, which are useful for analysis of the health care system. It contains over 3,000 data elements for all counties in the U.S., with exception of Alaska. Data elements include county descriptor codes, health data, and limited data on vital statistics, industry, housing, expenditure and environmental factors. This document provides detailed information on ARF data sources, data elements, and definitions.

N82-33995/3 PC**$7.00/MF$3.00**
National Aeronautics and Space Administration, Washington, DC.
Aerospace Medicine and Biology. A Continuing Bibliography with Indexes, Supplement 235, August 1982.
Aug 82, 71p NAS 1.21:7011(235), NASA-SP-7011(235)

This bibliography lists 201 reports, articles and other documents introduced into the NASA Scientific and Technical Information system in July 1982.

PB82-923011 PC**$5.25/MF$3.00**
National Cancer Inst., Bethesda, MD. International Cancer Research Data Bank.
The Role of Proteases in Metastasis.
Oncology overview.
Oct 82, 65p NCI/ICRDB/OB-82/11

Oncology Overviews are a service of the International Cancer Research Data Bank (ICRDB) Program of the National Cancer Institute, intended to facilitate and promote the exchange of information between cancer

scientists by keeping them aware of literature related to their research being published by other laboratories throughout the world. Each Oncology Overview represents a survey of the literature associated with a selected area of cancer research. It contains abstracts of articles which have been selected and organized by researchers associated with the field. Contents: The demonstration and characterization of proteolytic enzymes secreted by tumor cells implicated in the metastatic process; Thrombogenesis related phenomena associated with the formation and inhibition of metastases; Effects of protease inhibitors on invasion and metastasis formation; Morphological and other studies implicating proteases in metastasis.

PB82-923012 PC**$6.00**/MF**$3.00**
National Cancer Inst., Bethesda, MD. International Cancer Research Data Bank.
Monoclonal Antibodies.
Oncology overview.
Oct 82, 76p NCI/ICRDB/OB-82/12

Oncology Overviews are a service of the International Cancer Research Data Bank (ICRDB) Program of the National Cancer Institute, intended to facilitate and promote the exchange of information between cancer scientists by keeping them aware of literature related to their research being published by other laboratories throughout the world. Each Oncology Overview represents a survey of the literature associated with a selected area of cancer research. It contains abstracts of articles which have been selected and organized by researchers associated with the field. Contents: Methods for production of monoclonal antibodies; Monoclonal antibodies against tumor-associated antigens; Monoclonal antibodies against normal cell antigens; Monoclonal antibodies against viral antigens; Monoclonal antibodies against synthetic antigens; Review articles on monoclonal antibodies.

PB83-101683 PC **A05**/MF **A01**
National Cancer Inst., Bethesda, MD. International Cancer Research Data Bank.
Recent Reviews in Carcinogenesis 1982.
Aug 82, 84p NCI/ICRDB/RK-82

Recent Reviews in Carcinogenesis is a service of the International Cancer Research Data Bank (ICRDB) Program of the National Cancer Institute, intended to facilitate and promote the exchange of information between cancer scientists. It contains abstracts of review articles in carcinogenesis research, selected and organized by research scientists, covering literature published by investigators throughout the world. Contents: Chemical carcinogenesis; Radiation carcinogenesis; Dietary factors in carcinogenesis; Epidemiology, etiology and genetic aspects of human cancer; Environmental and occupational factors in carcinogenesis; Cellular and molecular mechanisms in carcinogenesis; Modification of carcinogenesis; Viral and immunological aspects of carcinogenesis; Methodology in carcinogenesis research; Other reviews in carcinogenesis.

PB83-112425 PC **A04**/MF **A01**
National Center for Health Statistics, Hyattsville, MD. Div. of Health Examination Statistics.
Health and Nutrition Examination Survey (HANES I) - Dietary Frequency and Adequacy, HANES Catalog Number 4701.
Sep 80, 70p NCHS/DF-79/018B
Supersedes PB-295 907. For system on magnetic tape, see PB-295 906.

The first Health and Nutrition Examination Survey (HANES I), conducted during the period 1971-75, was designed to measure the nutritional status and health of the U.S. population ages 1-74 years and to obtain more detailed information on the health status and medical care needs of adults ages 25-74 years in the civilian noninstitutionalized population. The information obtained during the course of the survey consisted of: a detailed dietary interview; general medical histories & detailed histories of respiratory disease, cardiovascular disease, & arthritis; health care needs & general well-being questionnaire; a general medical examination; dental, dermatological, & opthalmological examination; anthropometry; vision tests & speech tests; x-rays of the hands, knees, hips & chest; blood and urinary laboratory tests; electrocardiogram; spirometry & pulmonary diffusion tests; and tap water samples. There were a total of 32,331 sample persons of which 31,973 were interviewed and 23,808 were examined. This data tape contains demographic characteristics, food frequency data and total nutrient intake from all foods listed in the 24-hour recall dietary interview for 20,749 sample persons 1-74 years of age.

PB83-115956 PC **A03**/MF **A01**
Health Care Financing Administration, Baltimore, MD. Office of Research and Demonstrations.
Health Care Financing Program Statistics - Medicare: Use of Home Health Services, 1978.
Herbert A. Silverman. Aug 82, 32p HCFA/PUB-03138
See also PB82-125873.

This report presents 1978 data on the use of home health agency (HHA) services by aged and disabled persons enrolled in the Medicare program. Time trends are presented for selected financial measures to highlight significant changes which have occurred in program reimbursements for HHA services relative to total Medicare expenditures during the period from 1969 to 1978. Detailed data on the patterns of use of HHA services are available only since 1974. The data for 1978 are presented to highlight two aspects of the program's experiences in the use of HHA services.

PB83-116798 PC **A02**/MF **A01**
McKinsey and Co., Inc., Washington, DC.
Developing Programs for Achieving Appropriate Lengths of Stay.
Jun 75, 24p VA-75-6178

The average length of stay in VA hospitals remains unnecessarily long in comparison to other U.S. hospitals, in spite of recent progress in this area. Avoidable inpatient days have been found to be caused primarily by delays in physicians' management of patient care, treatment on an inpatient basis where outpatient treatment would have been appropriate, and delays in outplacement. This report describes methods developed in five test hospitals for gauging the appropriateness of lengths of stay, identifying the causes of unnecessarily prolonged hospitalization, and developing programs to achieve reductions. The methods involve analysis of random samples of patient records, formal staff and resident performance evaluations concerning length of stay, and corrective programs targeted specifically to the causes of avoidable inpatient delays as identified in the review of the patient records sample. Suggestions are made for incorporating this approach into the management systems of individual hospitals and the VA Department of Medicine and Surgery overall.

PB83-117341 PC **A02**/MF **A01**
Public Health Service, Rockville, MD.
Advancedata, Number 64. Vital and Health Statistics of the National Center for Health Statistics.
4 Nov 80, 12p HHS/PUB/PHS-81-1250

A study of the relationship between personal health practices and health consequences was conducted in Alameda County, California, in 1965 by the Human Population Laboratory of the California State Department of Public Health. Findings indicated a positive relationship between good health practices and physical health status. This report presents data on persons 20 years of age and over for these seven practices, by sex, race or ethnicity, age, income, and education.

PB83-118695 PC **A08**/MF **A01**
Health Care Financing Administration, Baltimore, MD. Office of Research and Demonstrations.
Health Care Financing Program Statistics - The Medicare and Medicaid Data Book, 1981.
Final rept.,
Donald Muse, and Darwin Sawyer. May 81, 160p HCFA/PUB-03128

This publication presents descriptive data on the Medicare and Medicaid programs. The book is intended as a resource tool for public officials, researchers, policy analysts and consumers with an interest in the organization and operation of the two programs. The material is organized into four chapters. Chapter I highlights the basic features of Medicare and Medicaid and the ways in which each program interacts with the other. Chapter II reports recent trends in program enrollment, service use and government expenditures. Chapter III provides in-depth coverage of Medicare program operations, including detailed data tables for 1978. Chapter IV provides comparable coverage of Medicaid program operations, including detailed data tables for FY 1979.

PB83-119024 PC **A06**/MF **A01**
Veterans Administration, Washington, DC.
Making More Effective Use of VA Facilities to Improve Health Care for Veterans in District 7: Veterans Administration District 7 Plan.
Rept. for 1976-80.
Mar 75, 125p VA/75-6184

This document is the 5-year plan for the Veterans Administration's seventh district, which includes five VA hospitals in Maryland, West Virginia, and Washington, D.C. Plans for each hospital describe major problems, proposed remedial actions, required resources, and expected results. An appendix of statistical tables is included.

PB83-119172 PC **A16**/MF **A01**
California Dept. of Health Services, Sacramento.
Synthesis and Documentation of the PHRED (Prepaid Health Research, Evaluation, and Demonstration) Quality Assurance Demonstration,
Final rept.,
Rigby Leighton. Dec 81, 353p
Grant HCFA-96-90299

This report summarizes one of the major demonstrations of the Prepaid Health Research, Evaluation, and Demonstration (PHRED) Project. The demonstration addressed the issue of the techniques that could be used by a State Medicaid agency to monitor the quality of care in HMOs contracting to provide benefits to Medicaid eligibles. The essence of the demonstration was to take a criteria set developed for this project and develop and implement two quite different approaches to obtain the data necessary to apply the criteria. A brief synthesis of the various concepts and techniques that were involved in the PHRED QA demonstration and discussion of their potential application in other settings is included in this report.

PB83-119354 PC **A04**/MF **A01**
Veterans Administration, Washington, DC.
Accelerating the Pace of Patient Care: Management Action Plans of Ann Arbor and Cincinnati VA Hospitals.
Study document no. 17.
4 Mar 75, 51p VA/75-6179

This is a follow-up study to the 1974 report, 'Strengthening Hospital Management', in which several management problems facing VA and non-VA hospitals were identified. In this document, the action plans for accelerating the pace of patient care at Ann Arbor and Cincinnati VA hospitals are described. At Ann Arbor it was decided that patient care could be accelerated by improving physician management of patients, diagnosing or treating more patients on an outpatient basis, improving response times for special x-ray procedures, and strengthening responsiveness of other key support activities. The Cincinnati study concluded that care could be speeded up by eliminating causes of outplacement delays, emphasizing timeliness of physician management of patients, and reducing structural problems contributing to prolonged pre-operative stays.

PB83-119362 PC **A03**/MF **A01**
McKinsey and Co., Inc., Washington, DC.
Strengthening Hospital Management: Initial Progress Review.
21 Nov 74, 39p VA-74-6176

This report reviews progress in the initial stages of an investigation of hospital management inside and outside the Veterans Administration. The objective of the project is to find problems common to both VA and non-VA hospitals, and to use the hospitals' diverse and common experience to the benefit of all. It was found that most VA hospitals operate at high levels of resource productivity with respect to administrative and clinical functions, but that the pace and responsiveness of patient care processes are in need of improvement; in the average non-VA hospital, the opposite was found to be the case. The study recommended areas in which the VA can accelerate the pace and responsiveness of its patient care processes without sacrificing resource productivity; and suggested methods by which non-VA hospitals can improve the productivity of their resource utilization in order to be more responsive to pressures to contain hospital costs.

PB83-119875 PC **A05**/MF **A01**
Chinese Medical Association, Beijing.

Chinese Medical Journal. Volume 95, Number 9, September 1982.
Sep 82, 83p

Contents:
- Clinical experience in 50 cases of cardiac myxomas;
- Bone marrow involvement and leukemia in advanced non-hodgkin's lymphomas--Analysis of 58 cases;
- 131I and 132I carcinogenic effects in rat thyroid glands;
- Micro-enzyme-linked-immunosorbent assay in diagnosis of kala-azar;
- Filariasis survey by membrane filtration technic after mass DEC administration;
- Plasmodium falciparum cultivation in vitro with fresh rabbit serum;
- Plasma amino acid patterns of 42 normal Chinese;
- Preliminary study of blood gas analysis in cough and asthma diagnosis;
- Selective angiography in diagnosing primary hepatic carcinoma;
- Roentgenologic study of 41 cases of Wilson's disease;
- Shy-drager syndrome;
- Karyotype analysis in 2,079 consecutive liveborn infants;
- High-iodide endemic goiter;
- Clinical observation of amniotic fluid creatinine as an index of fetal maturity;
- Aminiotic fluid fetal blood group prediction and use in newborn hemolytic diseases.

PB83-121913 PC **A05**/MF **A01**
Chinese Medical Association, Beijing.
Chinese Medical Journal. Volume 95, Number 8, August 1982.
Monthly rept.
Aug 82, 84p

Contents:
- Rural preschool child health care organization, content and methods;
- Clinical trial of cisplatin in advanced malignancies;
- Clinical application of pure silk vascular prostheses;
- Neijing chronobiologic medical theories;
- Study of diabetic eye complications other than diabetic retinopathy;
- Extra-intracranial arterial bypass in 278 cases with severe ischemic complete stroke;
- Clinical observation of fourth ventricle tumor in 40 adults;
- Procedures for detection and discrimination of hemophilia A carriers;
- Ocular signs of incontinentia pigmenti in one case;
- CSF cyclic AMP changes in nervous system inflammatory diseases;
- HLA and diabetes mellitus in Chinese;
- Experimental investigations on canine endotoxic shock--Changes in hemodynamics and involvement of some humoral factors;
- Expressive aphasia and dexterous digital movements;
- Ribosome-lamella complexes in a lymphoid-plasma cell of Waldenstrom's macroglobulinemia.

PB83-122457 PC **A06**/MF **A01**
Veterans Administration, Washington, DC. Dept. of Medicine and Surgery.
Planning to Improve Health Care for Veterans: DM and S Field Planning Guide.
Jan 76, 118p VA/76-6177

This publication was developed to aid individual VA districts and hospitals in making resource allocation decisions and in developing local plans that are responsive to local needs and problems. It contains three chapters, each describing a stage of the field planning process in detail. The first chapter describes the content of the planning guidance that the VA Central Office should issue annually to initiate the process. Chapter 2 describes the content of district plans and how they are prepared, reviewed, and agreed upon. Chapter 3 shows how approved district plans are translated from paper into action and sets out the procedures for monitoring implementation progress and retaining necessary operation and financial control.

PB83-122838 PC **A03**/MF **A01**
Health Care Financing Administration, Washington, DC.
Health Care Financing Program Statistics - National Annual Medicaid Statistics: Fiscal Years 1973 through 1979.
Final rept.,
Donald N. Muse. Aug 82, 32p HCFA/PUB-03133

This publication is an annual report containing a descriptive overview of Medicaid (Title XIX of the Social Security Act) trend data on medical assistance payments and recipients of services for Fiscal Years 1973 through 1979 and detailed data for Fiscal Years 1977 through 1979. The primary purpose of presenting these statistics is to provide State, regional, and national statistical data to program managers and researchers in order that they may moniter the Medicaid program. Thus the intent is to display national statistics, not to provide detailed analysis.

PB83-124321 PC **A99**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Prediction of Pediatric Blood Lead Levels From Gasoline consumption,
Irwin H. Billick. 21 Apr 82, 630p HUD-0002584

Tables illustrate the results of a study which analyzed the relationship between blood levels in children and gasoline lead consumption in New York City, Chicago, and Louisville. It examined the percent of blood lead measurements which exceeded 30 micrograms of lead per 100 milliliters of blood, a level which the Environmental Protection Agency has concluded is the maximum safe level. Tables provide data on the blood lead levels, by race, age group, and sampling data for all three cities. The New York City data are separated by screening status as well. The blood lead levels are reported both as geometric mean blood lead, for the given cell, and the percent of observations with blood leads greater than 30 micrograms of lead per 100 milliliters of blood. To illustrate the time dependence of the blood lead, plots have been made for a single age - race population for all three cities. The 24 - 35 year old age group was selected since this appears to be the most sensitive group. Tables summarize data base characteristics and the number of observations for each city, broken down by race. Gasoline data are appended.

PB83-124420 PC **A08**/MF **A01**
Institute of Occupational Medicine, Edinburgh (Scotland).
Autopsy Studies of Coalminers' Lungs.
Final rept.,
J. M. G. Davis, J. Chapman, Paula Collings, A. N. Douglas, and June Fernie. Apr 79, 158p TM/79/9
Sponsored in part by Commission of the European Communities, Luxembourg, and National Coal Board.

This report is based on the examination of lungs from 500 coalminers who had worked in 25 collieries that were involved in the British National Coal Board's Pneumoconiosis Field Research Study. These collieries were chosen from all the mining areas in the United Kingdom. Pathological findings were compared with the lung dust content at death as well as lifetime estimates of dust exposure. In addition chest radiographs taken shortly before death, where these were available, were compared to the types of pathology found at autopsy as well as to the lung dust content. The main conclusions from each group of studies are presented.

PB83-124818 PC**$13.00**/MF **A01**
Centers for Disease Control, Atlanta, GA. Lab. Training and Consultation Div.
Laboratory Procedures for the Diagnosis of Intestinal Parasites - Third Edition, 1982.
Dorothy M. Melvin, and Marion M. Brooke. 1982, 243p HHS/CDC/LIPO-82-004, HHS/CDC/LIPO-82/8282
Color illustrations reproduced in black and white.

The manual presents methods of collecting and preserving specimens suitable for parasitologic diagnoses, methods for laboratory examination of feces and other body materials, suggested laboratory routines for reliable examinations and 'cookbook' directions for wet mounts, concentrations, permanent stains, cultivation, and miscellaneous procedures. The manual also includes sections on quality control, safety procedures, and extensive references.

PB83-854588 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Health Insurance Industry. 1974-November, 1982 (Citations from the Management Contents Data Base).
Rept. for 1974-Nov 82.
Nov 82, 76p

This bibliography contains citations concerning medical and dental health insurance. Health care cost containment, including the role of the provider and carrier are discussed. The effects of inflation and the numbers of claims filed are also considered. Medicare health insurance and supplementary health insurance are also addressed. (Contains 98 citations fully indexed and including a title list.)

6F. Environmental Biology

DE82008484 PC **A08**/MF **A01**
Argonne National Lab., IL.
Northeast Regional Environmental Impact Study: Reference Document for the Health Effects of Air Pollution.
P. J. Walsh, E. D. Copenhaver, and E. E. Calle. Nov 81, 155p ANL/ES-121
Contract W-31-109-ENG-38
Portions of document are illegible.
Microfiche only after original copies are exhausted.

The US Department of Energy (USDOE) is assessing the potential for cumulative and interactive environmental impacts associated with the proposed conversion to coal of up to 42 powerplants in the Northeast Region of the United States under the Powerplant and Industrial Fuel Use Act of 1978. This study provides analysis in four interrelated areas: (1) air quality, (2) solid waste disposal, (3) fuel supply and the transportation of fuel and solid waste, and (4) health effects. This technical reference document is a summary of literature on health effects related to emissions from coal burning in general; it does not specifically address the health effects associated with the conversion of the 42 powerplants under consideration. Areas of concern and differing views that result in uncertainty are identified. Graphics and tabular data display the health data with environmental data and standards for comparison. Both criteria and noncriteria pollutants are included. (ERA citation 07:050553)

N82-34076/1 PC **A03**/MF **A01**
Texas A and M Univ., College Station. Dept. of Plant Sciences.
Air Pollutant Production by Algal Cell Cultures.
F. Fong, and E. A. Funkhouser. Aug 82, 33p NAS 1.26:166384, NASA-CR-166384
Contract NCC2-102

The production of phytotoxic air pollutants by cultures of Chlorella vulgaris and Euglena gracilis is considered. Algal and plant culture systems, a fumigation system, and ethylene, ethane, cyanide, and nitrogen oxides assays are discussed. Bean, tobacco, mustard green, cantaloupe and wheat plants all showed injury when fumigated with algal gases for 4 hours. Only coleus plants showed any resistance to the gases. It is found that a closed or recycled air effluent system does not produce plant injury from algal air pollutants.

N82-34077/9 PC **A04**/MF **A01**
California Univ., Berkeley. Dept. of Mechanical Engineering.
Application of Control Theory to Dynamic Systems Simulation.
D. M. Auslander, R. C. Spear, and G. E. Young. Aug 82, 68p NAS 1.26:166383, CELSS-16, NASA-CR-166383
Contract NCC2-67

The application of control theory is applied to dynamic systems simulation. Theory and methodology applicable to controlled ecological life support systems are considered. Spatial effects on system stability, design of control systems with uncertain parameters, and an interactive computing language (PARASOL-II) designed for dynamic system simulation, report quality graphics, data acquisition, and simple real time control are discussed.

PB83-114082 PC$11.00/MF$11.00
RHM Research Ltd., High Wycombe (England). Lord Rank Research Centre
'Bacillus thuringiensis': A Biological Method of Pest Control,
A. Crafts-Lighty. c1981, 23p A-741

This report describes an investigation into the feasibility of manufacturing spores of Bacillus thuringiensis for use as an insecticide. The literature on this topic is briefly reviewed and the basic biochemical mode of spore insectidal action described. The present extent of commercial exploitation is detailed and the U.K. market for B. thuringiensis preparations is estimated. Future market trends and opportunities for RHM are considered. (Copyright (c) by RHM Research Ltd, 1981.)

PB83-117796 PC A12/MF A01
Illinois Natural History Survey, Urbana.
A Survey of Potential National Natural Landmarks, Biotic Themes, of the Western Central Lowlands.
Final rept.,
Paul G. Risser. Sep 81, 267p
Contract NPS-CX-0001-0087
Color illustrations reproduced in black and white.

This study is one of 61 which cover the natural regions of the United States, defined largely according to Fenneman (1928). Each study describes the ecological and/or geological features characteristic of that region, then evaluates sites representative of the various features. Sites which are outstanding examples are suggested as potential National Natural Landmarks. This report describes 54 areas of ecologic significance throughout the Western portion of the Central Lowlands natural region which extends from the northern border of North Dakota south to the northeastern part of Texas. Sites are classified and given a priority rating based on their representation of terrestrial and aquatic themes and subthemes (plant community types) characteristic of the region.

PB83-118208 PC A16/MF A01
E.V.S. Consultants Ltd., North Vancouver (British Columbia).
Effects, Pathways, Processes, and Transformation of Puget Sound Contaminants of Concern,
D. E. Konasewich, P. M. Chapman, E. Gerencher, G. Vigers, and N. Treloar. Jul 82, 373p NOAA-TM-OMPA-20, NOAA-82101307

The overall goal of the Project is to develop an understanding of the existing levels, fates and effects of contaminants in Puget Sound. It summarizes information available on the physical and toxicological properties of contaminants previously found in Puget Sound and suggests which of those chemicals are likely of greatest ecological concern.

PB83-119529 PC A04/MF A01
Institute of Occupational Medicine, Edinburgh (Scotland).
Tests of Small Airway Disease.
Final rept.,
P. C. Emmett, R. G. Love, R. J. Aitken, C. A. Soutar, and W. J. Hannan. Jul 82, 68p TM/82/9
Sponsored in part by Commission of European Communities, Luxembourg, and National Coal Board.

A comparison has been made of the relationship between indices of the distribution of fine inhaled particles and the results of a number of tests of small airway dysfunction. It was intended to compare the relative merits of these tests against an index that was firmly associated with ventilation inequalities in the lung periphery.

PB83-127738 PC A09/MF A01
Drexel Univ., Philadelphia, PA.
Sampling Frequency - Microbiological Drinking Water Regulations.
Final rept.,
Wesley O. Pipes, and Robert R. Christian. Sep 82, 193p EPA/570/9-82-001
Grant EPA-R-805637

The primary goal of this project was to develop a sampling model which can be used to specify the sampling frequency needed to determine compliance with the microbiological maximum contaminant levels of the National Interim Primary Drinking Water Regulations. Two approaches to model development were used. The emperical approach was based on fitting coliform data to frequency distributions. The mechanistic approach was an attempt to analyze the physical elements of the water system in order to determine if samples from a particular location are representative of water quality over an area and if it is more likely that coliforms will be found in certain types of sampling locations.

PB83-126017 PC A03/MF A01
Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.
Air Quality, Oil Shale, and Wilderness - A Workshop to Identify and Protect Air Quality Related Values of the Flat Tops.
Forest Service general technical rept. (Final),
Douglas G. Fox, Dennis J. Murphy, and Dennis Haddow. Sep 82, 41p FSGTR/RM-91

In January 1981, a workshop was conducted to discuss the potential impacts of oil shale developments on the air quality of western Colorado. The workshop illustrates a general approach to the problem of identifying air quality related values. It is anticipated that this approach will prove useful to all federal land managers involved with Class I area protection.

PB83-128348
(Order as PB83-128181, PC A24/MF A01)
Argonne National Lab., IL.
Health and Environmental Studies of Coal Gasification Process Streams and Effluents,
C. A. Reilly, Jr., A. S. Boparai, S. Bourne, R. D. Riotard, and D. A. Haugen. Sep 82, 11p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p282-292 Oct 81.

No abstract available.

PB83-128421
(Order as PB83-128181, PC A24/MF A01)
Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
Premanufacture Review of Synfuels under TSCA,
Matthew Hale, Jr., and Carl Mazza. Sep 82, 17p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p423-439 Oct 81.

No abstract available.

6H. Food

PB83-114090 PC$14.00/MF$14.00
RHM Research Ltd., High Wycombe (England). Lord Rank Research Centre
Drying and Instantizing - A Literature Review,
R. J. Byrde, and E. M. Sands. c1981, 68p A-988

The literature concerning the drying and possible associated instantising of foodstuffs has been reviewed, primarily covering the period 1974 to the present date. This review concentrates on larger sized particulate products, mainly fruit, vegetables, and meat. It does not discuss powders at all since they have already been the subject of considerable study, and the approach required for their instantisation is very different. The object of this review is two-fold. Firstly, to evaluate methods either currently used or potentially applicable to the drying of foodstuffs. Secondly, to assess ways in which the overall quality of dried foods can be improved.

PB83-128264
(Order as PB83-128181, PC A24/MF A01)
Oak Ridge National Lab., TN.
Health and Environmental Studies of H-Coal Process,
K. E. Cowser, J. L. Epler, C. W. Gehrs, M. R. Guerin, and J. A. Klein. Sep 82, 24p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal - Based Synfuels, p124-149 Oct 81.

No abstract available.

PB83-853325 PC N01/MF N01
National Technical Information Service, Springfield, VA.
Cholesterol in Foods and Its Effects on Animals and Humans. September, 1974-November, 1982 (Citations from the Food Science and Technology Abstracts Data Base).
Rept. for Sep 74-Nov 82.
Nov 82, 268p
Supersedes PB82-861345.Prepared in cooperation with the International Food Information Service, Frankfurt am Main (Germany, F.R.).

This bibliography contains citations concerning cholesterol in foods and its possible effects on human mortality and heart disease. Methods for measuring cholesterol levels in foods and in humans and animals are considered. Methods for lowering cholesterol levels in foods and in humans and animals are discussed, and food consumption trends of high cholesterol foods are noted. (This updated bibliography contains 282 citations, 24 of which are new entries to the previous edition.)

PB83-854042 PC N01/MF N01
National Technical Information Service, Springfield, VA.
Food Storage in Controlled Atmospheres. February, 1973-November, 1982 (Citations from the Food Science and Technology Abstracts Data Base).
Rept. for Feb 73-Nov 82.
Nov 82, 303p
Supersedes PB82-861915.Prepared in cooperation with the International Food Information Service, Frankfurt am Main (Germany, F.R.).

Reports are cited on the storage life and quality of foods preserved in controlled atmosphere environments. The effects of oxygen, nitrogen, ethylene, inert gas, carbon dioxide, and sulfur dioxide on food storage are discussed. Technological, biological, and biochemical criteria for controlled atmosphere storage are considered. (This updated bibliography contains 328 citations, 29 of which are new entries to the previous edition.)

PB83-854687 PC N01/MF N01
National Technical Information Service, Springfield, VA.
Amino Acids in Foods: Analytical Methods. 1972-November, 1982 (Citations from the Food Science and Technology Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 248p
Prepared in cooperation with the International Food Information Service, Frankfurt am Main (Germany, F.R.).

This bibliography contains citations concerning methods used to qualitate and quantitate free and proteinbound amino acids in foods. Methods discussed include gas chromatography, high pressure liquid chromatography, fluorometry and colorometric analysis. (Contains 250 citations fully indexed and including a title list.)

PB83-854869 PC N01/MF N01
National Technical Information Service, Springfield, VA.
Heat Exchangers Used by the Food Industry. 1972-November, 1982 (Citations from the Food Science and Technology Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 157p
Supersedes PB82-857186.Prepared in cooperation with the International Food Information Service, Frankfurt am Main (Germany, F.R.).

This bibliography contains citations concerning heat exchangers used by he food industry. The design and operations of numerous heat exchangers are discussed, and the economics including energy conservation are considered. Included in the discussion are plate, spiral, and tubular heat exchangers. (This updated bibliography contains 183 citations, 19 of which are new entries to the previous edition.)

PB83-854877 PC N01/MF N01
National Technical Information Service, Springfield, VA.

Tryptophan in Foods. 1972-November, 1982 (Citations from the Food Science and Technology Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 244p
Supersedes PB82-856030.Prepared in cooperation with the International Food Information Service, Frankfurt am Main (Germany, F.R.).

This bibliography contains citations concerning the essential amino acid tryptophan. The nutritional value, bioavailability, flavor enhancement, methods of analysis, toxicology and legislation concerning trytophan are considered. (This updated bibliography contains 222 citations, 15 of which are new entries to the previous edition.)

PB83-855064 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Amino Acids in Vegetables. 1976-November, 1982 (Citations from the Food Science and Technology Abstracts Data Base).
Rept. for 1976-Nov 82.
Nov 82, 152p
Prepared in cooperation with the International Food Information Service, Frankfurt am Main (Germany, F.R.).

This bibliography contains citations concerning the amino acid content of vegetable products. The effects of growth conditions, processing, and storage on the amino acid composition of vegetables is considered. Among the vegetables discussed are peas, many varieties of beans, and corn. (Contains 145 citations fully indexed and including a title list.)

PB83-855072 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Amino Acids in Grains. 1976-November, 1982 (Citations from the Food Science and Technology Abstracts Data Base).
Rept. for 1976-Nov 82.
Nov 82, 172p
Prepared in cooperation with the International Food Information Service, Frankfurt am Main (Germany, F.R.).

This bibliography contains citations concerning the amino acid content of grain and grain products. The effects of growth conditions, processing, and storage on amino acid composition are considered. Among the grains discussed are wheat, oats, barley, rye, and rice. (Contains 167 citations fully indexed and including a title list.)

PB83-920400 Standing Order
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual. Sections I-VI. Updates.
Irregular repts.
1982, 1p
Supersedes PB82-920400.
Paper copy available on Standing Order, Deposit Account required. North American Continent price $250.00/year; all others write for quote. Single copies also available in paper copy only. Basic report available as PB83-920499.

The Compliance Program Guidance Manual was developed to provide a convenient and organized system for issuing and filing plans and instructions directed to Food and Drug Administration Field operations. These plans and instructions are surveillance and/or compliance oriented and provide needed direction from Headquarters Offices and Bureaus in accomplishing FDA's regulatory obligations. The Manual is divided into six major categories as follows: Food and cosmetics, Drugs, Biologics, Veterinary medicine, Medical devices, and Radiological health.

PB83-920499 PC**$175.00**
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Sections I-VI.
Oct 82, 3307p FDA/ACA-83/6
Supersedes PB82-920499. Manual includes 6 sections that are also available individually as PB83-920599, PB83-920699, PB83-920799, PB83-920899, PB83-920999 and PB83-921099. Updates to basic report available as PB83-920400.

The FDA Compliance Program Guidance Manual provides a system for issuing and filing written program plans and instructions directed to Food and Drug Administration field operations for project implementation.

PB83-920500 Standing Order
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section I. Foods and Cosmetics. Updates.
Irregular repts.
1982, 1p
Supersedes PB82-920500.
Paper copy available on Standing Order, Deposit Account required. North American Continent price $80.00/year; all others write for quote. Single copies also available in paper copy only. Basic report available as PB83-920599.

The standing order allows one to obtain updates to Section I of the Compliance Program Guidance Manual which provides plans and instructions to Field operations which are surveillance and/or compliance oriented and provide needed direction from Headquarters Offices and Bureaus in accomplishing FDA's regulatory obligations for foods and cosmetics. This section also includes the concept to the Manual and miscellaneous material relating to compliance functions.

PB83-920599 PC**$60.00**
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section I. Foods and Cosmetics.
Oct 82, 651p FDA/ACA-83/6A
Supersedes PB82-920599. Updates to basic report available as PB83-920500.

The FDA Compliance Program Guidance Manual provides a system for issuing and filing written program plans and instructions directed to Food and Drug Administration field operations for project implementation.

PB83-920700 Standing Order
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section III. Biologics. Updates.
Irregular repts.
1982, 1p
Supersedes PB82-920700.
Paper copy available on Standing Order, Deposit Account required. North American Continent price $35.00/year; all others write for quote. Single copies also available in paper copy only. Basic report available as PB83-920799.

The standing order allows one to obtain updates to Section III of the Compliance Program Guidance Manual which provides plans and instructions to Field operations which are surveillance and/or compliance oriented and provide needed direction from Headquarters Offices and Bureaus in accomplishing FDA's regulatory obligations for biological products. This section also includes the concept to the Manual and miscellaneous material relating to compliance functions.

PB83-920799 PC**$10.00**
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section III. Biologics.
Oct 82, 124p FDA/ACA-83/6C
Supersedes PB82-920799. Updates to basic report available as PB83-920700.

The FDA Compliance Program Guidance Manual provides a system for issuing and filing written program plans and instructions directed to Food and Drug Administration field operations for project implementation.

6J. Industrial (Occupational) Medicine

PB83-115410 PC **A07**/MF **A01**
Research Triangle Inst., Research Triangle Park, NC.
An Evaluation of Personal Sampling Pumps in Sub-Zero Temperatures.
Final rept.,
Carl D. Parker, Martin B. Lee, and Joan C. Sharpe.
Sep 77, 134p RTI-43U-1271, NIOSH-210-76-0124
Contract PHS-NIOSH-210-76-0124

Personal sampling pumps were evaluated at temperatures between 25 degrees C to minus 50 degrees C. Pumps were evaluated for stability of the flow rate; pressure drop versus flow rate capabilities; reliability of calibration; ability to continuously sample cold air; ease of recalibration; battery performance; and environmental effects on metals, rubbers, plastics, motors, lubricants, and electronic components. All of the personal sampling pumps were sensitive to the temperature changes. All were useful at 0 degrees C, and none at minus 50 degrees C. Nickel-cadmium batteries were the most suitable sources of power up to minus 40 degrees C. They were not useful at minus 50 degrees C. The authors conclude that the personal sampling pumps evaluated are not designed for use in subzero environments, and significant changes are needed in the standard models to optimize them for low temperature use.

PB83-115782 PC **A05**/MF **A01**
Safety Sciences, San Diego, CA.
AIM: Accident Investigation Methodology.
Jan 78, 100p NIOSH-210-75-0017
Contract PHS-NIOSH-210-75-0017

The background to and development of an accident investigation methodology (AIM) to analyze occupational injuries are reviewed. On-site investigation of 125 fall accidents was conducted. Accident models, such as the management oversight and risk tree, the Royal Society for the Prevention of Accidents, and the Frase coding models, are described and the application of their concepts to AIM is discussed. AIM factors, such as sampling considerations, conduct of accident investigations, data collection and analysis, and procedures evaluation and modification are described, along with the conceptual basis of AIM. AIM components of organizational safety analysis, accident sequence analysis, and hazards/countermeasures analysis are summarized.

PB83-115790 PC **A03**/MF **A01**
National Loss Control Service Corp., Long Grove, IL.
Health Hazards in a Foundry. Book I. Pattern Shop, Core Room, Molding Shop and Sandhandling Department.
Dec 76, 44p
Contract PHS-NIOSH-210-75-0057
See also PB-274 234, and PB83-115808.

Occupational health hazards in the pattern shops, core rooms, molding shops, and sand handling departments of foundries are reviewed. Specific health hazards are described along with methods of hazard detection and control. Problems caused by noise, solvent vapors, epoxy vapors, and dust in pattern shops, dusts, gases, vapors, noise, and noniodizing radiation in core rooms, gases, vapors, noise, and fumes in molding shops, and silica dust in sand handling departments are discussed. Remedial actions recommended include reporting of the problem and use of protective equipment such as face shields, goggles, ear plugs, gloves, and barrier cream. Also recommended are good housekeeping practices, regular medical examinations, and engineering controls. The authors emphasize cooperation between workers and management to ensure a safe factory environment.

PB83-115808 PC **A03**/MF **A01**
National Loss Control Service Corp., Long Grove, IL.
Health Hazards in a Foundry. Book II. Melting and Pouring Department,
J. D. Sanders. Dec 76, 50p
Contract PHS-NIOSH-210-75-0057
See also PB83-115790.

Occupational health hazards in the melting and pouring areas of foundries are reviewed. Specific health hazards are described along with methods of hazard detection and control. Health problems discussed include those caused by metal dusts and fumes, mineral dusts, organic dusts, gases, vapors, noises and vibration, and radiant energy. Dust and fumes hazards in foundries which use aluminum (7429905), brass, bronze, iron (7439896), and magnesium (7439954) are described. Remedial actions also are reviewed including reporting of the problems, use of protective equipment and clothing, good workplace and personal hygiene, regular medical examinations, and engineering controls.

PB83-116038 PC **A04**/MF **A01**
Monsanto Research Corp., Dayton, OH. Dayton Lab.

Development of Multiple-Purpose Aerosol Generator.
Final rept.
William H. Hedley, Henry H. S. Yu, and Lewis N. Cash. May 77, 64p NIOSH-210-76-0144
Contract PHS-NIOSH-210-76-0144

A multiple purpose aerosol generation system was studied. The substances tested on this modified aerosol generator and homogenizer were triethylene glycol (112276), talc (14807966), halocarbon grease 25-5S, paraffin wax, and di-octyl-phthalate (117817) (DOP). The authors conclude that test results generally fulfilled the contract objectives.

PB83-117855 PC **A03**/MF **A01**
Bendix Corp., Cocoa Beach, FL. Launch Support Div.
Literature Search on Toxic and Carcinogenic Components of Paint.
Final rept.,
L. W. Phillips. 12 Nov 76, 29p
Contract PHS-NIOSH-210-76-0108

The current chemical agents used in paint and chemical coating that are considered to be toxic or carcinogenic are reviewed. The toxic or carcinogenic agents in various paint and chemical coating compositions are listed. Metal primer, decorative and building paint, and industrial and marine paint compositions are discussed. The types of solvents and chemicals found in paints are discussed. The authors conclude that two areas of major concern related to employee exposure to toxic and carcinogenic agents in paints and chemical coatings are the large amount and varied types of solvents used and the metallic compounds present.

PB83-118224 PC **A04**/MF **A01**
National Research Council, Washington, DC.
Evaluation of Portsmouth Naval Shipyard Cytogenetics and Spermatogenesis Protocol.
Final rept.
Oct 82, 63p
Contract DHHS-282-80-0043

An evaluation of a research protocol to study the workers at the Portsmouth Naval Shipyard for chromosomal and sperm abnormalities associated with low dose ionizing radiation exposure recommended that the study not be undertaken. The scientific backgrounds of the two types of studies are reviewed, and the capacity of the study population to add to scientific knowledge is evaluated. Neither significant new knowledge nor increased worker risk projections for adverse health consequences are believed to be attainable through the proposed study. Recommendations include avenues for needed research in the field and descriptions of appropriate human populations in which to conduct such research.

PB83-119230 PC **A05**/MF **A01**
National Inst. for Occupational Safety and Health, Cincinnati, OH. Div. of Biomedical and Behavioral Science.
Occupational Stress Factors in Video Display Terminal (VDT) Operation: A Review of Empirical Research,
M. J. Dainoff. 1980 79p

A review of the literature involving emperical research (experimental and field investigations) on stressful aspects of video display terminal (VDT) operation is presented. Studies reviewed included assessment of visual fatigue and/or performance, musculoskeletal symptoms, and operator attitudes towards job demands and quality of working life. In addition, some investigation included discussions and evaluations of the physical attributes of VDT workplaces; including ergohomic factors (task lighting, glare conditions, anthropometric configuration of VDT and accompanying furniture), environmental factors (temperature, humidity, radiation), and psychosocial factors (job demand, work content, work-rest schedules).

PB83-122473 PC **A08**/MF **A01**
Charles River Associates, Inc., Cambridge, MA.
Economic and Environmental Analysis of the Current OSHA Lead Standard: Main Report.
Sep 82, 157p OSHA/IS-83/001
See also PB83-122481.
Also available in set of 9 reports PC E99, PB83-122465.

This is an analysis of the costs and economic impacts of compliance with occupational health regulations that limit exposure to airborne lead in primary and secondary lead smelters and in the lead-acid battery industry. The report begins with a detailed description of existing economic and financial conditions in these industries. It also contains information on current workplace exposures to lead industries and resultant blood lead levels in the work force.

PB83-122481 PC **A05**/MF **A01**
Charles River Associates, Inc., Cambridge, MA.
Economic and Environmental Analysis of the Current OSHA Lead Standard. Appendix A. Analysis of Compliance with Alternative Occupational Lead Exposure: Secondary Smelter No. 1.
Sep 82, 93p OSHA/IS-83/002
See also PB83-122473 and PB83-122499.
Also available in set of 9 reports PC E99, PB83-122465.

This is an analysis of the technological feasibility and cost-effectiveness of reducing airborne lead to 150 and 50 micrograms per cubic meter of air in a large secondary lead smelter. Specific information on emission sources, potential controls, and marginal costs of controls, and the effectiveness of controls is presented.

PB83-122499 PC **A05**/MF **A01**
Charles River Associates, Inc., Cambridge, MA.
Economic and Environmental Analysis of the Current OSHA Lead Standard. Appendix B. Analysis of Compliance with Alternative Occupational Lead Exposure: Secondary Smelter No. 2.
Sep 82, 96p OSHA/IS-83/003
See also PB83-122481 and PB83-122507.
Also available in set of 9 reports PC E99, PB83-122465.

This is an analysis of the technological feasibility and cost-effectiveness of reducing airborne lead to 150 and 50 micrograms per cubic meter of air in a large secondary lead smelter. Specific information on emission sources, potential controls, and marginal costs of controls, and the effectiveness of controls is presented.

PB83-122507 PC **A05**/MF **A01**
Charles River Associates, Inc., Cambridge, MA.
Economic and Environmental Analysis of the Current OSHA Lead Standard. Appendix C. Analysis of Compliance with Alternative Occupational Lead Exposure: Primary Smelter No. 1.
Sep 82, 98p OSHA/IS-83/004
See also PB83-122499 and PB83-122515.
Also available in set of 9 reports PC E99, PB83-122465.

This is an analysis of the technological feasibility and cost-effectiveness of reducing airborne lead to 150 and 50 micrograms per cubic meter of air in a large secondary lead smelter. Specific information on emission sources, potential controls, the marginal costs of controls, and the effectiveness of controls is presented.

PB83-122515 PC **A05**/MF **A01**
Charles River Associates, Inc., Cambridge, MA.
Economic and Environmental Analysis of the Current OSHA Lead Standard. Appendix D. Analysis of Compliance with Alternative Occupational Lead Exposure: Primary Smelter No. 2.
Sep 82, 81p OSHA/IS-83/005
See also PB83-122507 and PB83-122523.
Also available in set of 9 reports PC E99, PB83-122465.

This is an analysis of the technological feasibility and cost-effectiveness of reducing airborne lead to 150 and 50 micrograms per cubic meter of air in a large secondary lead smelter. Specific information on emission sources, potential controls, the marginal costs of controls, and the effectiveness of controls is presented.

PB83-122523 PC **A04**/MF **A01**
Charles River Associates, Inc., Cambridge, MA.
Economic and Environmental Analysis of the Current OSHA Lead Standard. Appendix E. Analysis of New Smelting Technologies in the Lead Industry.
Sep 82, 65p OSHA/IS-83/006
See also PB83-122515 and PB83-122531.
Also available in set of 9 reports PC E99, PB83-122465.

This is an analysis of the technological feasibility and cost-effectiveness of reducing airborne lead to 150 and 50 micrograms per cubic meter of air in a large secondary lead smelter. Specific information on emission sources, potential controls, the marginal costs of controls, and the effectiveness of controls is presented.

PB83-122531 PC **A04**/MF **A01**
Charles River Associates, Inc., Cambridge, MA.
Economic and Environmental Analysis of the Current OSHA Lead Standard. Appendix F. Economic and Environmental Impacts of Retrofitting Primary Smelter Number 1 with a Direct Smelting Process.
Sep 82, 73p OSHA/IS-83/007
See also PB83-122523 and PB83-122549.
Also available in set of 9 reports PC E99, PB83-122465.

This is an analysis of the technological and environmental workplace effects of retrofitting an existing primary smelter with the Queneau-Schumann-Lurgi (QSL) direct smelting process. A financial analysis of the retrofit option is also presented.

PB83-122549 PC **A04**/MF **A01**
Charles River Associates, Inc., Cambridge, MA.
Economic and Environmental Analysis of the Current OSHA Lead Standard. Appendix G. Financial Overview of Public Companies in the Lead Industry.
Sep 82, 53p OSHA/IS-83/008
See also PB83-122531 and PB83-122556.
Also available in set of 9 reports PC E99, PB83-122465.

This report provides financial overviews of public companies that produce primary lead, secondary lead, or lead-acid batteries. The overviews summarize 5 year financial statements, long-term debt and credit agreements, and past and planned capital expenditures, including outlays for environmental control equipment. Overviews of three primary smelters, four secondary smelters, and eight lead-acid battery manufacturers are presented.

PB83-122556 PC **A08**/MF **A01**
Charles River Associates, Inc., Cambridge, MA.
Economic and Environmental Analysis of the Current OSHA Lead Standard. Appendix H. Feasibility and Cost of Lead-in-Air Controls in the Lead-Acid Battery Industry.
Sep 82, 155p OSHA/IS-83/009
See also PB83-122549.
Also available in set of 9 reports PC E99, PB83-122465.

This is an analysis of the feasibility and costs of reducing airborne lead to 150 and 50 micrograms per cubic meter of air in lead-acid battery plants. Specific information on emission sources, potential controls, and the costs of these controls are presented in detail in the report.

PB83-124438 PC **A07**/MF **A01**
Institute of Occupational Medicine, Edinburgh (Scotland).
A Study of the Day-to-Day Variation in the Composition of Dust Samples and of the Measurement Procedures Required to Establish the Composition of the Dust with Requisite Accuracy.
Final rept.,
A. J. Cowie, A. Ewing, J. F. Hurley, and J. Dodgson.
Sep 80, 127p TM/80/2
Sponsored in part by Commission of the European Communities, Luxembourg.

In U.K. collieries, control of the exposure of miners on longwall coalfaces to airborne respirable dust is currently effected by regular measurements of total respirable (mixed) dust concentrations using static MRE Type 113A sampling instruments sited in the return roadway at a point 70 m from the faceline. This study has now been extended in the present research to an examination of variations in dust composition on coalfaces to provide data on which a sampling scheme for the control of the exposure of miners to various noncoal mineral components (including quartz) of respirable coalmine dusts may be based, should this prove necessary. In particular, procedures involving sampling at the 70 m control point, similar to those employed for the control of total respirable (mixed) dust, were assessed and found to be equally effective for the monitoring of dust composition, if required.

PB83-125724 PC **A07**/MF **A01**
Occupational Safety and Health Administration, Washington, DC.
Selected Occupational Fatalities Related to Lockout/Tagout Problems as Found in Reports of OSHA Fatality/Catastrophe Investigations,
William W. Cloe. Aug 82, 145p OSHA/RP-83/001

This study of occupational fatalities related to lockout/tagout problems occurring during the period 1974-1980 continues the utilization of the OSHA fatality/catastrophe investigation reports as a source of information on how workplace incidents occur. The study is divided into three sections: Machines and Conveyors, Vehicles and Equipment, and Electrically Related. Eighty-three selected case files are utilized. These 83 fatalities occurred from injuries due to the worker being caught or drawn into moving parts of machinery, run over or crushed by equipment that had not been properly immobilized and electrocuted when there was a failure to securely shut off power. Each incident was assigned to one of five categories of factors most likely responsible for precipitating the incident even though several factors may have been present. These categories are: Operating Procedures, Accidental Activation of Machinery, Failure to Deactivate Machinery, Equipment Failure or Other. Employee activity at the time of the incident is examined. All eighty-three cases are included as case studies in this report.

PB83-125732 PC **A08**/MF **A01**
Occupational Safety and Health Administration, Washington, DC.
Occupational Fatalities Related to Miscellaneous Working Surfaces as Found in Reports of OSHA Fatality/Catastrophe Investigations,
William W. Cloe. Apr 82, 173p OSHA/RP-83/002

This study of occupational fatalities related to miscellaneous working surfaces continues the utilization of the OSHA fatality/catastrophe investigations. Covering the period 1974-1978, it includes the more common working surfaces, such as platforms, catwalks, steel erection/construction, building ledges, railroad cars, truck beds, bins, tanks, etc. Those involving maritime are excluded. The incidents are classified by factors related to the incident. These are: Operating Procedures, Material/equipment/facility Related, Environmental Conditions or Other. In addition, the employee activity at the time of the incident is examined. Case studies of the 104 working surface incidents are grouped generally into two sections: (1) fatalities resulting primarily from falls from elevations and (2) fatalities resulting from other accidents. The strengths and weaknesses of the data sources are discussed.

PB83-127886 PC **A06**/MF **A01**
Southwest Research Inst., San Antonio, TX.
Develop a Knowledge Baseline of Selected Employer and Employee Populations with Regard to Occupational Safety Principles and Practices.
Final rept.
1 Jul 76, 120p OSHA/RP-83/003
Contract DL-74-105

To establish baseline knowledge levels of health and safety matters, a nationwide survey has been performed. Ten industries were selected in which to perform the survey on the basis of their importance in accident and illness statistics. Two separate and distinct methods were incorporated in the design of this survey: personal interviews and a mail survey. An in-depth analysis has been performed on the results obtained in the personal interview and mail surveys.

PB83-129528 PC **A99**/MF **A01**
Tabershaw/Cooper Associates, Inc., Rockville, MD.
Occupational Diseases: A Guide to Their Recognition (Revised Edition),
Marcus M. Key, Austin F. Henschel, Jack Butler, Robert N. Ligo, and Irving R. Tabershaw. Jun 77, 619p DHEW/PUB/NIOSH-77-181
Contract PHS-HSM-99-73-90
See also PB-274 813. Library of Congress catalog card no. 78-600985.

Occupational diseases are discussed in terms of occupational health hazards as a means to recognition of the disease. The text covers routes of entry and modes of action, chemical hazards, physical hazards, biological hazards, dermatoses, airway diseases, plant and wood hazards, chemical carcinogens, pesticides, sources of consultation, and a list of references.

6L. Medical and Hospital Equipment

PB83-125401 PC **A13**/MF **A01**
Scientific Systems, Inc., Cambridge, MA.
Microprocessor Based Prosthetic Control.
Final rept. 1 Apr 79-31 Jul 81,
W. Jarisch, D. Gustafson, P. Doerschuk, and V. Jain. 1982, 282p NSF/ECS-82004
Grant NSF-PFR78-21670

This report explores the design of a system using modern digital signal processing techniques to generate control signals for a multifunction lower arm prosthesis from a set of surface electromyogram (EMG) signals. An overview of historical approaches to prosthesis control via EMG signals is provided and evidence that EMG signals have different spectral and cross-correlation structure is reviewed. The structure of stochastic process models is examined, with special attention paid to estimation techniques for those models. An overview of experimental results on stochastic model identification for EMG signals and on limb function using the Multiple Hypothesis Testing Technique is included.

PB83-126284 PC **A03**/MF **A01**
Thermo Electron Corp., Waltham, MA.
Fabrication of Implantable Artificial Heart Devices and Components.
Annual rept. May 81-Apr 82,
V. Poirier, and S. Buczak. Apr 82, 38p TE4269-258-82, NIH-N01-HV-92907-3
Contract N01-HV-92907
See also PB80-199102.

This report describes the fabrication activities conducted in support of NHLBI's Artificial Heart Program. The devices fabricated are used primarily by other NHLBI contractors conducting research and development in the artificial heart area. Pusher-plate pumps, especially the Model 14 'E'-ALVAD which can be coupled to the Statham Gould Driver as well as the Thermo Electron Driver, were the most extensively used. Other pusher-plate pumps that were used were the Model 12A PVAD (contoured for animal use) and the Model 12C PVAD (contoured for human use). Axisymmetric pumps, pump control systems, and clinical inflow and outflow conduits were also fabricated and delivered as directed by the program office.

PB83-126706 PC **A03**/MF **A01**
Monsanto Research Corp., Dayton, OH. Dayton Lab.
Physical Testing of Polymers for Use in Circulatory Assist Devices.
Annual rept. no. 2, 1 Jun 81-31 May 82,
Carl R. McMillin, and Alan L. Wurstner. Aug 82, 35p MRC-DA-1114
Contract N01-HV-0-2909
See also PB81-238834.

The objective of this program is to develop and validate an accelerated fatigue test for elastomers and to evaluate candidate cardiovascular elastomers with this test. In this reporting period, a 100-position fatigue tester was debugged. Preliminary fatigue results generated on this tester correlated well with previous results obtained on the wobble plate fatigue tester. Using uncut fatigue specimens, the fatigue resistance as measured on an increasing strain fatigue test at 37C in air was found to be as follows: Santoprene thermoplastic elastomer > Pellethane polyurethane > butyl rubber > silicone rubber > EPDM > Novitane polyurethane > natural rubber > neoprene > SBR > nitrile rubber. The presence of high concentrations of ozone (10 ppm) reduced the fatigue life of the elastomers in a widely varying manner with the strain at 50% of the specimens failing, being reduced from only 8% for Hexsyn olefin rubber (now also called Bion) to 70% for butyl rubber. The fatigue ranking of the uncut specimens fatigued in the presence of ozone at 37C in the increasing strain was found to be as follows: Santoprene > Avcothane > (urethane/silicone copolymer) > Pellethane > Hexsyn > Biomer polyurethane > butyl rubber > neoprene > natural rubber.

PB83-920900 Standing Order
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section V. Medical Devices. Updates.
Irregular repts.
1982, 1p
Supersedes PB82-920900.
Paper copy available on Standing Order, Deposit Account required. North American Continent price $50.00/year; all others write for quote. Single copies also available in paper copy only. Basic report available as PB83-920999.

The standing order allows one to obtain updates to Section V of the Compliance Program Guidance Manual which provides plans and instructions to Field operations which are surveillance and/or compliance oriented and provide needed direction from Headquarters Offices and Bureaus in accomplishing FDA's regulatory obligations for medical devices. This section also includes the concept to the Manual and miscellaneous material relating to compliance functions.

PB83-920999 PC**$20.00**
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section V. Medical Devices.
Oct 82, 684p FDA/ACA-83/6E
Supersedes PB82-920999. Updates to basic manual available as PB83-920900.

The FDA Compliance Program Guidance Manual provides a system for issuing and filing written program plans and instructions directed to Food and Drug Administration field operations for project implementation.

6M. Microbiology:

N82-33461/6 PC **A02**/MF **A01**
Canada Inst. for Scientific and Technical Information, Ottawa (Ontario).
Aeration-Agitation Control Based on a Mathematical Model of the Fermentation Process.
L. M. Kuzmina. 1982, 15p NRC/CNR-TT-2029, ISSN-0077-5606
Transl. into English from Khim. Farm. Zh. (Moscow), V. 14, No. 12, 1980 p 75-81.

Oxygen requirements of microorganisms in certain culture apparatus under specific conditions can be determined experimentally by regulating biosynthesis to obtain a regime under which the rate of oxygen consumption is at a maximum. It was determined at the same time that there is a range of values of the governing factors which ensure the maximum value for the rate of oxygen consumption. The model of variable scale segregation which was developed made it possible to construct an algorithm for calculating the optimum values for the governing factors during the fermentation process itself.

N82-33980/5 PC **A02**/MF **A01**
Canada Inst. for Scientific and Technical Information, Ottawa (Ontario).
Technique for the Aerobic Cultivation of Microorganisms in Water-in-Oil Emulsions.
1982, 15p NRC/CNR-TT-2031, ISSN-0077-5606
Transl. Into English of East German Patent No. 141393 (1980).

A technique for cultivating microorganisms in water in oil emulsions, particularly at high cell concentrations is described. Fermentation is facilitated in a reversed phase at technically and economically necessary cell concentrations. A stable water in oil emulsion is ensured at high cell concentrations by adding suitable substances to the fermentation medium. The formation of a stable reversed phase in the fermentation medium occurs when special additives are used.

6O. Pharmacology

N82-33983/9 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.

Stimulation of Body Weight Increase and Epiphyseal Cartilage Growth by Insulin Like Growth Factor.
S. Ellis. Sep 81, 15p NAS 1.15:84265, A-9059, NASA-TM-84285

The ability of insulin-like growth factor (IGF) to induce growth in hypophysectomized immature rats was tested by continuous infusion of the partially purified factor at daily doses of 6, 21, and 46 mU for an 8-day period. A dose-dependent growth of the proximal epiphyseal cartilage of the tibia and an associated stimulation of the primary spongiosa were produced by these amounts of IGF. The two highest doses of IGF also resulted in dose-dependent increases of body weight. Gel permeation of the sera at neutrality showed that the large-molecular-weight IGF binding protein was not induced by the infusion of IGF, whereas it ws generated in the sera of hypophysectomized rats that were infused with daily doses of 86 mU of human growth hormone.

PB83-920600 Standing Order
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section II. Drugs. Updates.
Irregular repts.
1982, 1p
Supersedes PB82-920600.
Paper copy available on Standing Order, Deposit Account required. North American Continent price $100.00/year; all others write for quote. Single copies also available in paper copy only. Basic report available as PB83-920699.

The standing order allows one to obtain updates to Section II of the Compliance Program Guidance Manual which provides plans and instructions to Field operations which are surveillance and/or compliance oriented and provide needed direction from Headquarters Offices and Bureaus in accomplishing FDA's regulatory obligations for drugs. This section also includes the concept to the Manual and miscellaneous material relating to compliance functions.

PB83-920699 PC$70.00
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section II. Drugs.
Oct 82, 1082p FDA/ACA-83/6B
Supersedes PB82-920699. Updates to basic report available as PB83-920600.

The FDA Compliance Program Guidance Manual provides a system for issuing and filing written program plans and instructions directed to Food and Drug Administration field operations for project implementation.

6P. Physiology

N82-33979/7 PC **A02**/MF **A01**
Texas Univ. at Houston. Dept. of Physiology and Cell Biology.
Insulin Resistance for Glucose Metabolism in Disused Soleus Muscle of Mice.
Progress Report.
M. J. Seider, W. F. Nicholson, and F. W. Booth. 28 Sep 81, 14p NAS 1.26:169353, NASA-CR-169353
Contracts NAS9-169353, AM-1-9393

Results of this study on mice provide the first direct evidence of insulin resistance for glucose metabolism in skeletal muscle that has undergone a previous period of reduced muscle usage. This lack of responsiveness to insulin developed in one day and in the presence of hypoinsulinemia. Future studies will utilize the model of hindlimb immobilization to determine the causes of these changes.

N82-33982/1 PC **A02**/MF **A01**
Tufts Univ., Medford, MA. Dept. of Physics.
Viscosity Dependence of the Rates of Diffusional Processes.
D. L. Weaver. Aug 82, 13p NAS 1.26:166394, NASA-CR-166394
Contract NCA2-OR785-210

It is shown that the rates of diffusion-controlled processes may have a solvent vicosity independent part as well as a viscosity dependent part. Some relevant experiments involving intramolecular polypeptide movements are discussed, and implications for some experiments on diffusion in membranes are outlined.

6R. Radiobiology

DE82006222 PC **A02**/MF **A01**
Mound Facility, Miamisburg, OH.
Radiological Impact of Power Plants: Coal Vs Nuclear.
C. E. Styron. 23 Dec 81, 16p MLM-2889
Contract AC04-76DP00053

A definitive comparison of the radiological impact of coal power plants with that of (normally operating) nuclear power plants is quite difficult because of (1) insufficient data on both types of plants; (2) the diversity in design and performance of coal-fired plants and emission control systems; and (3) the relatively low concentrations of radionuclides to be measured. Radiation doses to the public estimated for coal and normally operating nuclear power plants are quite small when compared to natural background, and the level of uncertainty associated with estimates of radiological impact is so large that it is not possible at this time to demonstrate a significant difference between radiological risks of coal and nuclear power. (ERA citation 07:049423)

DE82007515 PC **A07**/MF **A01**
Lawrence Livermore National Lab., CA.
Results of Calculations of External gamma-Radiation Exposure Rates from Fallout and the Related Radionuclide Compositions. Operations Nougat Through Bowline, 1962-1968.
H. G. Hicks. Jul 81, 126p UCRL-53152-Pt.8
Contract W-7405-ENG-48
Portions of document are illegible.
Microfiche only after original copies are exhausted.

Data are presented on calculated gamma radiation exposure rates and ground deposition of related radionuclides resulting from Events that deposited detectable radioactivity outside the Nevada Test Site complex. (ERA citation 07:048217)

DE82011812 MF **A01**
Goodyear Atomic Corp., Piketon, OH.
Study of Technetium Uptake in Vegetation in the Vicinity of the Portsmouth Gaseous Diffusion Plant.
T. A. Acox. 1982, 21p GAT-S-25, CONF-820418-5
Contract AC05-76OR00001
UCC-ND and GAT environmental protection seminar, Gatlinburg, TN, USA, 5 Apr 1982, Portions of document are illegible.
Available in microfiche only.

Technetium-99 was measured in vegetation and soil collected on and near the Portsmouth Gaseous Diffusion Plant to obtain an estimate of the soil-to-vegetation concentration factors. The concentration factors appear to be lognormally distributed with a geometric mean of 3.4 (Bq/kg dry wt. tissue per Bq/kg dry wt. soil) and a geometric standard deviation of 4.7. A dose commitment was calculated using a hypothetical 3.7 x 10 exp 10 Bq Tc-99/year release and the actual CY-1981 concentration release of Tc-99. The radiological significance of Tc-99 in the terrestial food chain is substantially less than previously believed. (ERA citation 07:055049)

PB83-116913 PC **A04**/MF **A01**
Duke Univ. Medical Center, Durham, NC.
Effects of 200, 591 and 2450 MHz Microwaves on Cerebral Energy Metabolism,
Aaron P. Sanders, and William T. Joines. Oct 82, 72p EPA-600/1-82-014
Contract EPA-68-02-3233
Prepared in cooperation with Duke Univ., Durham, NC. Dept. of Electrical Engineering.

Earlier work has shown that levels of key biochemicals in the energy production system of rat brain are affected by exposure to 591 MHz microwave radiation at 13.8 mW/sq cm. The objectives of this study were to determine whether there are direct microwave effects on the biological system or whether they are secondary to the hyperthermia produced in the tissue, to establish dose-response relationships for the effects, and to investigate different frequencies of exposure and modulation of the carrier signal. The fluorescence of reduced nicotinamide adenine dinucleotide (NADH) in the rat brain was measured in vivo during exposure to the microwave radiation, and adenosine triphosphate (ATP) and creatine phosphate (CP) levels were measured chemically after exposure.

PB83-120246 PC **A04**/MF **A01**
Bureau of Radiological Health, Rockville, MD.
Background for Protective Action Recommendations: Accidental Radioactive Contamination of Food and Animal Feeds.
Final rept.,
B. Shleien, G. D. Schmidt, and R. P. Chiacchierini. Aug 82, 55p DHHS/PUB/FDA-82-8196, FDA/BRH-82/101

This report provides background material for the development of FDA's Protective Action Recommendations: Accidental Radioactive Contamination of Food and Animal Feeds. The rationale, dosimetric and agricultural transport models for the Protective Action Guides are presented, along with information on dietary intake. In addition, the document contains a discussion of field methods of analysis of radionuclides deposited on the ground or contained in milk and herbage. Various protective actions are described and evaluated, and a cost-effectiveness analysis for the recommendations performed.

PB83-921000 Standing Order
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section VI. Radiological Health. Updates.
Irregular repts.
1982, 1p
Supersedes PB82-921000.
Paper copy available on Standing Order, Deposit Account required. North American Continent price $50.00/year; all others write for quote. Single copies also available in paper copy only. Basic report available as PB83-921099.

The standing order allows one to obtain updates to Section VI of the Compliance Program Guidance Manual which provides plans and instructions to Field operations which are surveillance and/or compliance oriented and provide needed direction from Headquarters Offices and Bureaus in accomplishing FDA's regulatory obligations for those products monitored for radiation. This section also includes the concept to the Manual and miscellaneous material relating to compliance functions.

PB83-921099 PC$20.00
Food and Drug Administration, Rockville, MD.
FDA Compliance Program Guidance Manual (FY 83). Section VI. Radiological Health.
Oct 82, 476p FDA/ACA-83/6F
Supersedes PB82-921099. Updates to basic manual available as PB83-921000.

The FDA Compliance Program Guidance Manual provides a system for issuing and filing written program plans and instructions directed to Food and Drug Administration field operations for project implementation.

6S. Stress Physiology

PATENT-4 340 371 Not available NTIS
Department of the Air Force, Washington, DC.
Upper and Lower Arm Load Simulator.
Patent,
Gerald J. Kron. Filed 18 Mar 81, patented 20 Jul 82, 6p AD-D009 738/6, PAT-APPL-6-244 842
Supersedes PAT-APPL-6-244 842, AD-D008 533.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

This invention relates to an apparatus for simulating the loads acting on the arms of an aircraft pilot under high G conditions including a first torque motor of pancake-like configuration attached to the flight suit near the elbow area of the pilot. A second torque motor positioned near the pilot's waist operated through a

tether line to apply a force to the shoulder of the pilot. With both torque motors operating, the upper and lower arms of the pilot are loaded in a manner to simulate the effect of acceleration loading of primary consequence, +Gz. (Author)

PB83-119081 PC **A05**/MF **A01**
National Research Council, Washington, DC.
Polar Biomedical Research - An Assessment.
Rept. for 15 Dec 80-30 Sep 82.
1982, 94p
Contract DAMD17-81-C-1012
See also PB83-119099.

A committee of physicians, social scientists, and biologists reviews polar biomedical research, identifies research needs, and recommends priorities. Main conclusions are (a) that psychocultural, compared with purely biological, factors will continue to generate a disproportionately large share of polar medical problems, (b) that improving awareness and application of the biomedical data that exist in private and government data banks is a top priority, and (c) that greater emphasis on polar biomedicine in educational curricula and professional society activities is urgent.

PB83-119099 PC **A05**/MF **A01**
National Research Council, Washington, DC.
Polar Biomedical Research - An Assessment. Appendix. Polar Medicine - A Literature Review.
Rept. for 1940-81,
Frederick C. Koerner. 1982, 95p
Contract DAMD17-81-C-1012
See also PB83-119081.

This Appendix provides background for the report of the Ad Hoc Committee on Polar Biomedical Research (Polar Biomedical Research - An Assessment) and an introduction to the literature for those working in polar biomedical research. A bibliography of 729 documents covering the period 1940-1981 is presented and briefly reviewed under the headings: 'Nutrition,' 'Physiologic Changes during Polar Life,' and 'Pathologic Changes during Polar Life.'

6T. Toxicology

PB83-126243 PC **A05**/MF **A01**
Roth (H. Daniel) Associates, Inc., Rockville, MD.
NO2 and Health Effects: Analysis of Selected Studies.
Annual rept. Nov 80-Oct 81,
H. Daniel Roth, and Ellen Post. Oct 82, 86p GRI-80/0112
Contract GRI-5080-351-0353

Several studies have addressed the issue of whether an association exists between ambient levels of NO2 and health. This is of critical importance to the gas industry, because low levels of NO2 are a known by-product of gas range cooking. This report evaluates the findings in six NO2 health studies. Three of these studies deal directly with the issue of adverse health effects associated with gas cooking and three deal with the general NO2/health effects issue. In assessing these studies, several criteria were applied, including examination of design protocols, statistical models used to analyze the data, and interpretations given to statistical results. In addition, in cases where the raw data were available for analysis, they were subjected to alternative statistical tests. The general finding from these analyses is that no conclusive link exists between the levels of NO2 produced by an unvented gas range and health.

PB83-126680 PC **A14**/MF **A01**
Battelle Toxicology Program Office, Vienna, VA.
Preclinical Intravenous Toxicity Study of WR-2721 (NSC-296961) in CDF1 Mice and Beagle Dogs.
Final rept. Mar 80-Jul 82,
G. N. Rao, B. Boysen, M. Balk, A. Fekete, and G. Thompson. 16 Jul 82, 318p
Contract N01-CM-1-7365
Also pub. as Hazleton Raltech, Inc., Madison, WI. rept. nos 80005/80007/80009 and RAL-81/1011.

Single Dose Lethality Study in Mice: The objectives were to determine the daily LD10, LD50, and LD90 for WR-2721 (NSC-296961) in mice, to develop data that will permit an estimate of drug toxicity, and to provide data from a rodent species for use in determining the initial dose for toxicity studies in dogs. Single Dose Toxicity Study in Mice: The objectives were to develop data that will permit an estimate of target organ toxicity after the single intravenous dose of WR-2721 (NSC-296961) in mice. Single Dose Toxicity Study in Dogs: The objectives were to determine the toxic effects after intravenous administration of WR-2721, NSC-296961 to dogs, and to verify the safety of one tenth the LD10 as defined in mice.

PB83-127472 PC **A99**/MF **A01**
Battelle Toxicology Program Office, Vienna, VA.
Intravenous Lethality and Toxicity Studies in Sprague-Dawley Rats and Defined Dose Toxicity Studies in Beagle Dogs of N-(2-Hydroxyethyl)-2-Nitro-1H-Imidazole-1-Acetamide (NSC-301,467) (SR-2508) (Phase II of Task I),
Final rept. 13 Aug 81-30 Jul 82,
S. E. Unwin, T. E. Shellenberger, J. L. Carter, J. T. Liao, and J. A. Bay. 5 Oct 82, 698p
Contract N01-CM-1-7365
Also pub. as Midwest Research Inst., Kansas City, MO. rept. no. MRI-KC-PT-7150-82-4, and 7150-B6.

N-(2-Hydroxyethyl)-2-nitro-1H-imidazole-1-acetamide (NSC-301,467) (SR-2508) was administered intravenously to Sprague-Dawley rats and beagle dogs for the evaluation of X1 and X10 lethality and toxicity.

PB83-129577 PC **A05**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Environmental Criteria and Assessment Office.
Health Assessment Document for 1,1,2-Trichloro-1,2,2-Trifluoroethane Chlorofluorocarbon-113 (CFC-113)(Revised Draft),
Richard Carchman, Mark M. Greenberg, Jeff Beaubier, and Dagmar Cronn. Nov 82, 83p EPA-600/8-82-002

Chlorofluorocarbon 113 (1,1,2-trichloro-1,2,2-trifluoroethane) has little potential to cause direct adverse health effects at levels found or expected in the general environment (<4.2 ppb). Experimental data do not indicate adverse health effects in humans at a TLV of 1,000 ppm. At exposure levels greatly exceeding 1,000 ppm, impairment of neurological and cognitive functions (humans) and detrimental cardiovascular effects (animals) have been observed. A major concern and uncertainty involves its role in the expected depletion of stratospheric ozone. A decrease in the ozone level is expected to result in an increased amount of biologically-damaging radiation at the earth's surface. The lifetime of chlorofluorocarbon 113 in the atmosphere is about 86 years.

7. CHEMISTRY

7A. Chemical Engineering

DE82009322 MF **A01**
Ebasco Services, Inc., New York.
Conceptual Project Study for Anthracite Coal Gasification to Produce Fuels and Chemicals, NEPGAS Project.
1981, 393p DOE/RA/20221-T1-V.1
Contract FG01-79RA20221
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This project report summaries the work on the technical development and coal-derived fuels market assessment for the NEPGAS project. The scope of work completed under this authorization includes; site characterization, market assessment, technical development, capital investment, project economic assessment, and project recommendation and conclusions. As a result of this study it can be concluded that: it is technically feasible to make synthetic fuel (methanol) in an environmentally acceptable manner using anthracite as a respirce base; the methanol derived from anthracite is competitive with methanol derived from natural gas or oil and is rapidly approaching equity with imported fuels; methanol can be used as a combustion turbine fuel; the resources coal, water and site exist in Northeast Pennsylvania to support the plant; and there is sufficient combustion turbone peaking power capacity in the market area to consume the output of a 2500 tons per day methanol fuel plant. (ERA citation 07:056002)

DE82010032 PC **A02**/MF **A01**
Sandia National Labs., Livermore, CA.
Industrial Use of Molten Nitrate/Nitrite Salts.
R. W. Carling, and R. W. Mar. Dec 81, 24p SAND-81-8020
Contract AC04-76DP00789

Nitrate salts have been used for years as a high-temperature heat transfer medium in the chemical and metal industries. This experience is often cited as an argument for the use of these salts in large-scale solar energy systems. However, this industrial experience has not been well documented and a study was carried out to provide such information to the solar community and to determine the applicability of this data base. Seven different industrial plants were visited and the plant operators were interviewed with regard to operating history and experience. In all cases the molten salt systems operate without problems. However, it is not possible to apply the base of industrial experience directly to solar thermal energy applications because of differences in operating temperature, salt composition, alloys used, and thermal/mechanical conditions. (ERA citation 07:044418)

DE82011143 PC **A03**/MF **A01**
Cummins Engine Co., Inc., Columbus, IN.
Synfuel Modified Diesel. Third Quarterly Progress Report, October 1, 1981-December 31, 1981.
1981, 33p DOE/ET/15450-T21
Contract AC03-79ET15450
Portions of document are illegible.

Yanmar's effort was directed toward: (1) heat release analysis of SRC-II fuel in a prechamber diesel, and (2) improving the particulate trap to obtain reliable and consistent particulate concentration from a prechamber engine burning SRC-II blend fuel. Yanmar also disassembled the engine to check for excessive wear and deposits; none were found. Komatsu has started to obtain spark assisted data on the baseline engine. Although 100% SRC-II fuel was not attempted, spark assist has made significant contribution to the combustion of 50% SRC-II blend or less. Competitive fuel economy was also obtained with 50% SRC-II blend. Thus, it was shown that spark assist can improve the operating range of blended SRC-II fuel. The major problems are: (1) spark plug cracking, and (2) engine failure due to rough and knocking combustion in the marginal operating range with surface discharge spark plug. The location of the spark plug in the combustion chamber and its timing was found to be quite important. Conventional electrode gap spark will be tried; and if no breakage is encountered, 100% SRC-II fuel will be attempted. (ERA citation 07:042024)

DE82011437 PC **A07**/MF **A01**
International Coal Refining Co., Allentown, PA.
SRC-I Monthly Technical Reports, September 1978-June 1979, October 1979.
Dec 81, 145p DOE/OR/03054-T10
Contract AC05-78OR03054
Portions of document are illegible.

Monthly reports for September to December 1978, January to June 1978, and October 1979 have been combined in this report, along with two short topical reports. The monthly reports deal with information needed and being obtained for the demonstration plant designs in particular: filtration or deashing of coal liquids, material and heat balance, gasification of residues to generate hydrogen (Koppers-Totzek and Texaco considered), process control, equipment specifications, fluid mechanics in preheaters and dissolvers, etc. The first topical report considers that run-of-mine coal will contain more ash than prepared coal (17.0% vs 10.4%) and more water. The effects of the larger amount of ash are that, for a given product capacity, larger equipment will be required in all areas of the plant and especially in the filtration area (because of the higher feed rate of ROM coal and its layer of solids). In the second topical report, economic com-

parisons of several deashing processes for the demonstration plant were within 10% of each other in projected capital (100% US Filters produced SRC-1 at the lowest cost), but all required selling prices within 5% of each other; operating costs were also taken into the comparison as well as recovery efficiency and differences in feed rate to produce the same amount of product. (ERA citation 07:042051)

7B. Inorganic Chemistry

N82-33462/4 PC **A03**/MF **A01**
Canada Inst. for Scientific and Technical Information, Ottawa (Ontario).
Spherical Agglomeration of Flocculated Precipitate.
J. Neczaj-hruzewicz, and J. Szczypa. 1982, 33p
NRC/CNR-TT-2024, ISSN-0077-5606
Transl. into English from Wiadomosci Chemi. (Poland), V. 39, 1980 p 577.

A technique of separating hydrophilic fine solids from aqueous suspensions is presented. A well consolidated solid of low moisture content and clear water is produced. The technique is suitable for processing bulk quantities of aqueous suspensions.

7C. Organic Chemistry

N82-33529/0 PC **A02**/MF **A01**
Canada Inst. for Scientific and Technical Information, Ottawa (Ontario).
The Problem of Ensuring a Specified Molecular Weight in the Process of Emulsion Polymerization.
T. Y. Lazareva, and T. A. Gevorkova. 1982, 11p
NRC/CNR-TT-2026, ISSN-0077-5606
Transl. into English from Teor. Osnovy Khim. Tekhn. (Ussr), V. 15, No. 1, 1981 p 41-45.

A mathematical model for assuring the quality of the copolymer derived in emulsion polymerization is presented. The process of emulsion polymerization is optimized in order to ensure that it is governed by the law that the molecular weight of the copolymer changes as a function of conversion. An algorithm permitting control of the dosage of the modifier in order to obtain a given molecular weight is derived. The solution of this problem for the case of the continuous process of emulsion copolymerization in a chain of isothermal vessels with ideal mixing is presented. the controlling variable is the concentration of the distributed make up feed, which is calculated by the analytical method.

PAT-APPL-6-391 902 PC **A02**/MF **A01**
Department of the Navy, Washington, DC.
Improved Process for the Preparation of Dimethylmethylenedinitramine.
Patent Application,
George W. Nauflett. Filed 25 Jun 82, 9p AD-D009 752/7
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

The invention is a process for reacting methylinitramine with formaldehyde in a halogenated solvent and reacting the methylnitramine with formaldehyde in the presence of a strong sulfuric acid catalyst at certain specific temperatures to yield a final product having a yield rate of 70% or greater dimethylmethylenedinitramine. (Author)

7D. Physical Chemistry

DE82008320 PC **A10**/MF **A01**
Ukrainian Physics Journal.
Oct 72, 212p AEC-tr-7411/10
C , Ukr. Fiz. Zh. (Russ. Ed.), 17 n10 Pvp Oct 1972.Portions of document are illegible.

Twenty-seven papers on various subjects in solid state physics, atomic physics, high energy physics, plasma physics, accelerator physics, metallurgy, and crystallography are presented. Separate entries were made in the data base for the papers in scope. (ERA citation 07:051960)

DE82006780 PC **A02**/MF **A01**
Brown Univ., Providence, RI.
Interactions of Molecules with Surfaces. Progress Report, 1 April 1981-31 January 1982.
E. F. Greene. Jan 82, 9p DOE/ER/04974-T2, COO-4974-4
Contract AS02-78ER04974

An apparatus to record the angular distributions of beams of rare gases scattered from the surfaces of crystals is being tested and works well. It is to be used first to study the nearly elastic scattering of Ar from the (0001) face of graphite for comparison with the predictions of theoretical models. Measurements of the ionization of beams of K, Na, Li, and Tl on Si(111), Si(100) and polycrystalline Pt surfaces are used to provide information about the work function of the surface, phase changes occurring in the surface, the energies of adsorption of the atoms, their mobility on the surface, and their interactions as they move. The decomposition of W(CO) sub 6 can be activated by the collision of a fast atom with a stationary surface if the kinetic energy of the atom is greater than a threshold value of 540 kJ mol exp -1 . Several other molecules that react unimolecularly in the gas phase such as hexamethyl Dewar benzene, 3-sulfolene, trioxane, and paraldehyde do not yield measurable amounts of reaction. A more sensitive method of detection than analysis by gas chromatography or optical absorption is needed to reveal the results of these single, but energetic, collisions. (ERA citation 07:044897)

DE82008848 PC **A02**/MF **A01**
Oak Ridge National Lab., TN.
Pressure-Dependent Electron Attachment Rates in Perfluoroalkanes and Perfluoropropylene (1-C sub 3 F sub 6) and Their Effect on the Breakdown Strength of These Gases.
S. R. Hunter, L. G. Christophorou, D. R. James, and R. A. Mathis. 1982, 14p CONF-820331-2
Contract W-7405-ENG-26
Conference on gaseous dielectrics, Knoxville, TN, USA, 7 Mar 1982, Portions of document are illegible.

The pressure dependence of the attachment rate constant of several perfluoroalkane dielectrics has been studied in buffer gases of N sub 2 and Ar up to a total pressure of 2.4 MPa. It has been observed that the higher order perfluoroalkanes (n-C/sub N/F/sub 2N+2/; 3 less than or equal to N less than or equal to 6) exhibit a marked dependence of their attachment rate constant on the total gas pressure, particularly in the pressure range from 53 kPa to approx. 700 kPa in N sub 2 over a mean energy range of from thermal energy to approx. = 1 eV, and in Ar over the energy range from approx. = 0.3 eV to approx. = 4.5 eV. A considerably larger total pressure dependence has been observed for 1-C sub 3 F sub 6 in N sub 2 and Ar, which does not saturate, even at the highest buffer gas pressures (3.2 MPa). A partial pressure dependence of the attachment rate on 1-C sub 3 F sub 6 has also been observed in these mixtures, which may saturate above approx. 15 kPa, indicating that the attachment process involves the interaction of two or more 1-C sub 3 F sub 6 molecules. Breakdown measurements have been performed in 1-C sub 3 F sub 6 using uniform field electrodes and in mixtures of 1-C sub 3 F sub 6 /N sub 2 and 1-C sub 3 F sub 6 /SF sub 6 using point-plane electrodes. These measurements have been performed over the total pressure range 25 to 600 kPa. The dc breakdown strength of 1-C sub 3 F sub 6 is dependent on the total gas pressure after allowing for the effect of compressibility of the gas. Our attachment and breakdown measurements for these gases and gas mixtures are reported and discussed. (ERA citation 07:044891)

DE82012189 PC **A03**/MF **A01**
Mound Facility, Miamisburg, OH.
Electrolysis of Tritiated Water in Solid Polymer Electrolyte Cells.
R. E. Ellis. 9 Apr 82, 28p MLM-2902
Contract AC04-76DP00053

An investigation of the electrolysis of tritiated water using General Electric Company solid-polymer-electrolyte (SPE) cells was carried out at MRC-Mound. Several operating systems were built and tests done on three types of G.E. cell designs. Tritium concentrations of 1 to 300 Ci/ml in a single addition of tritiated water were used in the first four tests. Total cell operating time until SPE failure was recorded for these tests. The final five tests were designed to measure SPE lifetime at tritium concentrations of 1, 10, and 100 Ci/ml. Lifetimes were 203, 49-111, and 22 days for the 1, 10, and 100 Ci/ml tests, respectively. (ERA citation 07:045958)

DE82012765 PC **A08**/MF **A01**
Tennessee Univ., Knoxville.
Chemical Kinetic Studies on Dry Sorbents. Final Report.
W. T. Davis, and T. C. Keener. 15 Feb 82, 169p
DOE/FC/10184-1
Contract AC18-80FC10184
Portions of document are illegible.

The scope of this research investigation has included a review of potential additives suitable for dry flue-gas desulfurization (FGD) and a bench scale laboratory study to determine the chemical kinetics for the reaction of five different sorbents with sulfur dioxide. The sorbents chosen included sodium bicarbonate (NaHCO sub 3), soda ash (Na sub 2 CO sub 3), trona, lime (CaO) and hydrated lime (Ca(OH) sub 2). This study has shown that: (1) The reaction rate increases with temperature for soda ash and calcium oxide. The reaction temperature has an inverse effect on sodium bicarbonate and trona due, primarily, to the simultaneous thermal activation reaction. The calcium hydroxide-SO sub 2 reaction increased up to 550 exp 0 F, and then decreased, due to uneven gas flow distribution. (2) The reaction rates for soda ash, calcium oxide and calcium hydroxide were increased by decreasing their particle size. This effect was not confirmed for sodium bicarbonate and trona where reaction temperature was the most important reaction parameter. (3) Reaction with soda ash was found to be limited by the presence of an impervious ash layer which prevented interparticle gaseous diffusion. Calcium oxide and calcium hydroxide were found to be limited by a slow chemical reaction rate. Results on the rate-limiting steps for sodium bicarbonate and trona were inconclusive because of the simultaneous thermal activation reaction. (4) The effect of thermal activation was to increase the reaction rate for sodium bicarbonate and trona at lower temperatures. This effect was less pronounced at higher temperatures. (5) Results obtained for nitric oxide show limited adsorption for the five sorbents tested as compared to the finding for sulfur dioxide. (ERA citation 07:056034)

N82-33459/0 PC **A03**/MF **A01**
Arizona State Univ., Tempe.
A Primer on Sulfur for the Planetary Geologist.
Summary Report.
E. Theilig. Sep 82, 38p NAS 1.26:3594, NASA-CR-3594

Sulfur has been proposed as the dominant composition for the volcanic material on Io. Sulfur is a complex element which forms many intramolecular and intermolecular allotropes exhibiting a variety of physical properties. Cyclo-S8 sulfur is the most abundant and stable molecular form. The important molecular species within liquid sulfur change in concentration with temperature. Concentrations of the allotropes control the physical properties of the melt. Discontinuities in density, viscosity, and thermal properties reflect the polymerization process within liquid sulfur. Variations in the melting point are related to autodissociation of the liquid. Many solids forms of sulfur have been identified but only orthorhombic alpha and monoclinic beta sulfur, both composed of cyclo-S8 sulfur, are stable under terrestrial conditions. Physical properties of solid sulfur are dependent on the allotrope and, in some cases, the thermal history. Three natural terrestrial sulfur flows are described: (1) Siretoko-losan, Japan; (2) Volcan Azufre, Galapagos Islands; and (3) Mauna Loa, Hawaii. All of the flows are associated with fumarolic areas and are considered to have formed by the melting and mobilization of sulfur deposits. Surface textures of the flows indicate a behavior of molten sulfur similar to that of silicate lava. Channels, rivulets, and lobate edges were described for the flows. The solidification of man-made sulfur flows formed as part of the Frasch mining process by which sulfur is removed from the subsurface in a liquid state is described.

N82-33460/8 PC **A05**/MF **A01**
Norwegian Defence Research Establishment, Kjeller.

The Behaviour of Al Electrodes in Aqueous Solutions.
T. Valand. Aug 81, 83p NDRE/PUBL-81/1003, NDRE-376-VM-159

The behavior of oxide covered Al electrodes in aqueous solutions is treated. The behavior at low electrode potentials, i.e., below approximately -1.0 V (SCE) is emphasized. Based on the general theories of passivation, a thermodynamic treatment of the electrode is reported. Results from experiments with pure and alloyed Al are given. Usually, the potential step technique was used in these experiments, but other techniques, such as capacity measurements, were also applied. These results are discussed in the light of the thermodynamic treatment, especially when the ion transfer and the oxide formation process is considered. The cathodic hydrogen evolution reaction was treated by assuming that the step involving electron transfer is rate determining. The effects of oxide thickness and alloying elements on the hydrogen evolution reaction are discussed in accordance with this assumption. In this connection, the effect of separate phases formed on the electrode surface by the alloying elements is also discussed.

N82-33463/2 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
Chemical and Electrochemical Behavior of the Cr(3)/Cr(2) Half Cell in the NASA Redox Energy Storage System.
D. A. Johnson, and M. A. Reid. 1982, 21p NAS 1.15:82913, E-1318, NASA-TM-82913
Contract DE-AI04-80AL-12726
Presented at the 162ND Meeting of the Electrochem. Soc., Detroit, 17-22 Oct. 1982.

The Cr(III) complexes in the NASA Redox Energy Storage System were isolated and identified as Cr(H2O)6(+3) and Cr(H2O)5Cl(+2) by ion exchange chromatography and visible spectrophotometry. The cell reactions during charge-discharge cycles were followed by means of visible spectrophotometry. The spectral bands were resolved into component peaks and concentrations calculated using Beer's Law. During the charge mode Cr(H2O)5Cl(+2) is reduced to Cr(H2O)5Cl(+) and during the discharge mode Cr(H2O)5Cl(+) is oxidized back to Cr(H2O)5Cl(+2). Both electrode reactions occur via a chloride-bridge inner-sphere reaction pathway. Hysteresis effects can be explained by the slow attainment of equilibrium between Cr(H2O)6(+3) and Cr(H2O)5Cl(+2).

N82-33465/7 PC **A03**/MF **A01**
Canada Inst. for Scientific and Technical Information, Ottawa (Ontario).
Auto-Oxidation of Sulphites.
J. Veprek-siska, and S. Lunak. 1982, 29p NRC/CNR-TT-2023, ISSN-0077-5606
Transl. Into English from Chem. Listy (Prague), V. 75, 1981 p 113-131.

The mechanism of oxidation by molecular oxygen was investigated. A mechanism which is at variance with the generally accepted radical chain mechanism was formulated. The mechanism presented does not require the assumption of intermediary formation of radical intermediate products. Reactions considered were the auto-oxidation of sulfites, the thermal oxidation of sulfite catalyzed by copper ions, the photoinitiated reaction catalyzed by Fe(III) and Mn(III), the photosensitized reaction, and the catalyzed thermal reaction with an inhibitor present.

N82-33525/8 PC **A02**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Materials Science and Engineering.
Finite Element Modeling of Nonisothermal Polymer Flows.
D. Roylance. 14 Aug 81, 21p NAS 1.26:169355, RR-R81-3, NASA-CR-169355
Sponsored by NASA and Army Materials and Mechanics Research Center. Presented at the ACS Sym. Ser. Computer Appl. In Coatings and Plastics.

A finite element formulation designed to simulate polymer melt flows in which both conductive and convective heat transfer are important is described, and the numerical model is illustrated by means of computer experiments using extruder drag flow and entry flow as trial problems. Fluid incompressibility is enforced by a penalty treatment of the element pressures, and the thermal convective transport is modeled by conventional Galerkin and optimal upwind treatments.

N82-33527/4 PC **A04**/MF **A01**
Surface Analytic Research, Inc., Mountain View, CA.
Dynamic Mechanical Analysis and Organization/Storage of Data for Polymetric Materials.
M. Rosenberg, and W. Buckley. Jun 82, 55p NAS 1.26:166413, NASA-CR-166413
Contract NAS2-10803

Dynamic mechanical analysis was performed on a variety of temperature resistant polymers and composite resin matrices. Data on glass transition temperatures and degree of cure attained were derived. In addition a laboratory based computer system was installed and data base set up to allow entry of composite data. The laboratory CPU termed TYCHO is based on a DEC PDP 11/44 CPU with a Datatrieve relational data base. The function of TYCHO is integration of chemical laboratory analytical instrumentation and storage of chemical structures for modeling of new polymeric structures and compounds

N82-33528/2 PC **A04**/MF **A01**
Surface Analytic Research, Inc., Mountain View, CA.
Quantum Chemical Calculations for Polymers and Organic Compounds.
J. Lopez, and C. Yang. 1982, 51p NAS 1.26:166414, NASA-CR-166414
Contract NAS2-10789

The relativistic effects of the orbiting electrons on a model compound were calculated. The computational method used was based on 'Modified Neglect of Differential Overlap' (MNDO). The comound tetracyanoplatinate was used since empirical measurement and calculations along 'classical' lines had yielded many known properties. The purpose was to show that for large molecules relativity effects could not be ignored and that these effects could be calculated and yield data in closer agreement to empirical measurements. Both the energy band structure and molecular orbitals are depicted.

N82-34204/9 PC **A02**/MF **A01**
Sao Paulo Univ. (Brazil). Inst. de Fisica.
Simple Way of Solving the Hydrogen Atom Problem.
I. Kimel. Sep 80, 12p DE82-700020, IFUSP-P232

The eigenvalues and eigenfunctions for the hydrogen atom Schroedinger equation can be easily obtained after factorizing that equation in appropriate ways. The resulting factors resemble the creation and annihilation operators that Dirac introduced for the harmonic oscillator.

N82-34236/1 PC **A03**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Determination of Metastable Fraction in an Ion Beam Extracted from Ecr Plasma.
A. Matsumoto, S. Ohtani, and T. Iwai. Apr 82, 30p IPPJ-580
Sponsored by Ministry of Education.

The fraction of metastable state Ar(2+) 3p(4) (1)D ions in Ar(2+) beam was determined by an optical attenuation method (OAM) combined with the conventional beam attenuation method. The present OAM is based on observation of spatial decay of specified emission line intensities arising from charge changed ions, along the beam axis in a target gas cell. The validity of the OAM is discussed in detail. The cross sections for one electron capture by the ground state Ar(2+)(3p) ions, sigma sub 21' were measured independently by the OAM. Both the cross sections are of the order of 10 to the -14th power cm and sigma sub 21 is about 1.3 times as large as sigma sub 21 at the collision energy of 1.5 keV.

PAT-APPL-6-398 827 PC **A02**/MF **A01**
Department of the Navy, Washington, DC.
Fluorine Implantation of Polyacetylene and Graphite.
Patent Application,
David C. Weber, Patrick Brant, Fred E. Saalfeld, and Carmine Carosella. Filed 18 Jun 82, 15p AD-D009 749/3
Portions of this document are not fully legible.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

The document describes the conductivity and oxidation resistance of polyacetylene and the conductivity of graphite are increased by implanting fluorine cations at an ion beam energy from about 10 to about 60 KeV and a current such that the power does not exceed 0.7w/sq cm until a layer of fluorine implanted material with an average fluorine concentration from about 5 to about 25 atomic percent is obtained. (Author)

PB83-116046 PC **A05**/MF **A01**
Aerospace Corp., Washington, DC.
Drag Reduction in Brine Pipelines.
Final rept.,
P. A. Martino, and L. P. Weinberger. Aug 82, 91p ATR-82(9598)-01

The objective of this study was to determine the feasibility of employing drag-reducing polymers to reduce friction in brine pipelines. This study primarily focused on the cost-effective use of polymers to reduce pump power. An alternative use of drag-reducing polymers is to increase the flow rate in a pipe for a given pump power. The effectiveness of three well-known drag-reducing polymers was evaluated: polyethylene oxide, polyacrylamide, and guar gum. The effectiveness of each polymer was determined from computations of the friction coefficient for various concentrations of polymer in brine. An economic analysis was conducted to determine the feasibility of implementing the drag reduction concept at a Strategic Petroleum Reserve (SPR) site. A computer program was developed to calculate friction coefficients as a function of polymer concentration for different polymers. One of the results of this study was a better understanding of the mechanism of the drag reduction phenomenon. Two major findings of this study were that greater drag reduction can be achieved in smaller diameter pipes and that the addition of polymer to brine appears to be cost effective in some applications.

PB83-116699 PC **A02**/MF **A01**
Syracuse Univ., NY. Dept. of Chemistry.
Detection of Atmospheric Aldehydes by Photoacoustic Laser Spectroscopy.
Annual rept.,
George H. Atkinson. 1981, 23p CRC-APRAC-CAPA-17-80

There were two primary research goals sought during the first year of work on this project: (1) Photoacoustic spectroscopy utilizing pulsed laser excitation in the ultraviolet was evaluated as a technique for detecting aldehydes at concentrations of a ppm (or lower) in total pressures of an atmosphere of air. (2) Experimental variations of pulsed photoacoustic spectroscopy were studied in an effort to optimize the detectability limits and linearity of response for monitoring acetaldehyde and formaldehyde. Possibly, the most important accomplishment has been a general understanding of how pulsed photoacoustic detection of aldehydes can be performed with great sensitivity and a high degree of linearity.

PB83-119198 PC **A02**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Emission Measurement Branch.
Revised Test Methods 106 and 107 - (Proposed November 18, 1980, 45 FR 76346): Summary of Comments and Responses.
Jan 82, 25p EPA-450/3-82-002

This document addresses the public comments submitted after proposal of the vinyl chloride methods in the Federal Register. Changes made to the methods as a result of these comments are included. This document serves as the basis for the revisions which have been made to the test methods between proposal and promulgation.

PB83-119420 PC **A03**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Measurement of Volatile Organic Compounds - Supplement 1.
Guideline series.
Jul 82, 40p EPA-450/3-82-019
See also PB80-221674.

This document consists of three test methods that the Environmental Protection Agency believes have a wider range of application as written than the reference methods promulgated by the Agency in the course of developing national performance standards for specific source categories. While these three methods do not contain source specific application instructions, they can, with proper consideration as alternate or screening methods, produce results that in many instances are adequate for determining compliance. The

methods are 'General Measurement of Total Gaseous Organic Compound Emissions Using a Flame Ionization Analyzer,' 'Determination of Selected Volatile Organic Emissions by the Adsorption Collection Technique,' and 'Approximate Determination of Selected Volatile Organic Emissions Using Detector Tubes'.

PB83-124503 PC **A18**/MF **A01**
Environmental Monitoring and Support Lab.-Cincinnati, OH.
Handbook for Sampling and Sample Preservation of Water and Wastewater.
Rept. for 1978-81,
Edward L. Berg. Sep 82, 416p EPA-600/4-82-029
Supersedes EPA-600/4-76-049, PB-259946.

The four basic factors which affect the quality of environmental data are Sample Collection, Preservation, Analyses, and Data Recording. Improper action in any one of these areas will result in poor data from which poor judgements are certain. Therefore, this research program was initiated to provide guidance in the first two areas, Sample Collection and Preservation. Information obtained from the review of the literature and the results of a survey of field practices provides the basis for guidance in General Sampling Techniques, Automatic Samplers, Flow Measuring Devices, a Statistical Approach to Sampling, Preservation of Physical, Chemical, and Radiological Parameters, and Sampling Procedures for Surface Waters, Ground and Drinking Water, Municipal, Industrial, and Agriculture Waters. Finally, this handbook is not intended to supersede Sampling, Preservation, or Chain of Custody procedures specified by enforcement, compliance monitoring, or program offices, but rather to compliment their requirements.

PB83-126128 PC **A11**/MF **A01**
Indian Inst. of Tech., New Delhi.
Direct Contact Heat Transfer to Vaporizing Drop in Immiscible Liquids.
Doctoral thesis,
Surinder Singh Sambi. Mar 81, 229p

Direct contact heat transfer between single drops of n-pentane vaporizing in a series of 0,30,65 and 98 per cent (by volume) glycerol-distilled water solutions has been studied using cine-photography. The experiments have been carried out varying initial diameter from 1.0 to 3.5 mm and the temperature difference between the two immiscible liquids from 1.0 to 13.9C using a new nucleation technique. The nucleation technique is based on surface properties of teflon and avoids the drop from getting superheated. It has been shown that under conditions of thermal equilibrium a thin film of residual liquid should exist over the entire inside surface of vaporizing drop due to the effect of surface forces and not because of sloshing of the residual liquid, as visualized by Simpson and Co-workers. A semi-analytical expression for instantaneous heat transfer co-efficient as a function of vaporization has been developed. Another semi-analytical expression has been developed for the total vaporization time.

PB83-126573 PC **A07**/MF **A01**
Midwest Research Inst., Kansas City, MO.
Methods of Analysis for By-Product PCBs-Literature Review and Preliminary Recommendations.
Interim rept. no. 1, Mar-Apr 82,
Mitchell D. Erickson, and John S. Stanley. 12 Oct 82, 138p EPA-560/5-82-005
Contract EPA-68-015915
See also PB83-127696.

A review of the literature on polychlorinated biphenyl (PCB) analysis and recommendations for methods to determine by-product PCBs in commercial products and other matrices is presented. This report was prepared to assist EPA in formulating a rule regulating by-product PCBs. The published literature on PCB analysis is critically reviewed. Several hundred references are cited in a bibliography. The review if subdivided into extraction, cleanup, determination, data reduction, confirmation, screening, quality assurance, and by-product analysis sections. The determination section includes TLC, HPLC, GC (PGC and CGC), GC detectors (ECD, FID, HECD, EIMS, and other MS) and nonchromatographic analytical methods (NMR, IR, electrochemistry, NAA, and RIA). Techniques applicable to analysis of commercial products, air, and water for by-product PCBs are discussed. The final section of this report presents a recommended overall primary analytical scheme.

PB83-127696 PC **A11**/MF **A01**
Midwest Research Inst., Kansas City, MO.
Analytical Methods for By-Products PCBs--Preliminary Validation and Interim Methods.
Interim rept. no 4, 24 Apr-31 Aug 82,
Mitchell D. Erickson, John S. Stanley, Gil Radolovich, Kay Turman, and Karin Bauer. 11 Oct 82, 244p EPA-560/5-82-006
Contract EPA-68-01-5915
See also PB83-126573.

This document presents proposed analytical methods for analysis of by-products PCBs in commercial products, product waste streams, wastewaters, and air. The analytical method for commercial products and product waste streams consist of a flexible approach for extraction and cleanup of particular matrices. The 13C-labeled PCB surrogates are added as part of a strong quality assurance program to determine levels of recovery. The wastewater method is based on EPA Methods 608 and 625 with revisions to include use of the 13C-labeled PCB surrogates. The air method is a revision of a proposed EPA method for the collection and analysis of PCBs in air and flue gas emissions. Capillary or packed column gas chromatography/electron impact ionization mass spectrometry is proposed as the primary instrumental method. Response factors and retention times of 77 PCB congeners relative to tetrachlorobiphenyl-d6 are presented in addition to statistical analysis to project validity of the data and extrapolation of relative response factors to all 209 possible congeners. Preliminary studies using the 13C-labeled surrogates to validate specific cleanup procedures and to analyze several commercial products and product wastes indicate that the proposed analytical methods are both feasible and practical.

PB83-128256
(Order as PB83-128181, PC **A24**/MF **A01**)
Hittman Associates, Inc., Columbia, MD.
Sampling and Analysis of Process and Effluent Streams from the Exxon Donor Solvent Coal Liquefaction Pilot Plant,
Mark Notich, and Jung Kim. Sep 82, 17p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p107-123 Oct 81.

No abstract available.

PB83-854901 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Chemiluminescence: Measuring Methods. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 193p

This bibliography contains citations concerning the chemiluminescence analysis of substances. Sample system design, sample collection methods, measurement techniques and sensitivity of the instrumentation are discussed. High altitude air pollution studies are emphasized. (Contains 142 citations fully indexed and including a title list.)

PB83-854919 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Chemiluminescence: Measuring Methods. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 151p
Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning the chemiluminescence analysis of substances. Sample system design, sample collection methods, measurement techniques and sensitivity of the instrumentation are discussed. Studies of energy related air pollutants are emphasized. (Contains 134 citations fully indexed and including a title list.)

8.

EARTH SCIENCES AND OCEANOGRAPHY

8A. Biological Oceanography

PB83-116715 PC **A03**/MF **A01**
National Marine Fisheries Service, Woods Hole, MA. Northeast Fisheries Center.
Seasonal Phytoplankton Assemblages in Northeastern Coastal Waters of the United States,
Harold G. Marshall, and Myra S. Cohn. Jul 82, 40p
NOAA-TM-NMFS-F/NEC-15

The composition, concentration, and distribution of phytoplankton is discussed for the northeastern coastal waters. Areas of highest cell numbers included near shore waters adjacent to major estuary systems, Georges Bank, locations in the Gulf of Maine, and scattered sites along the shelf break. Areas of lowest cell concentrations were found at mid-shelf, within the Gulf of Maine, and in the more seaward stations. Seasonal patterns of succession occurred, with areas of high cell concentrations dominated by small-sized diatoms and several ultraplankton components. The seasonal presence of 678 phytoplankton is noted.

PB83-118620 PC **A02**/MF **A01**
California Sea Grant Coll. Marine Advisory Program, Davis.
Guidelines for Marine Ecological Surveys: Nekton.
1982, 19p
Grant NOAA-04-8-189

This set of guidelines for ecological surveys of marine nekton (mobile invertebrates, fish, etc.) represents the first of a series of survey guidelines developed by the California Committee on Marine Ecological Survey Standards. This series is the result of years of discussions among dozens of marine scientists actively involved in marine ecological surveys.

PB83-118877 PC **A04**/MF **A01**
Virginia Inst. of Marine Science, Gloucester Point.
An Annotated Bibliography of Climate and Fisheries Interactions,
Herbert M. Austin, Brenda L. Norcross, and Merton I. Ingham. May 82, 73p VIMS-SRAMSOE-263, NOAA-82091405
Special rept. no. 263 in Applied Marine Science and Ocean Engineering. Prepared in cooperation with National Marine Fisheries Service, Narragansett, RI. Atlantic Environmental Group.

Ecologists have for years sought bio-environmental relationships to explain changes in distribution and abundance patterns of marine organisms. The development of Ekman transport and upwelling indices by National Marine Fisheries Service oceanographers, and their application to recruitment forecasts, have focused the interest and efforts of fisheries biologists and oceanographers on the relationship between interannual variability of selected environmental factors and the resultant interannual fluctuations in recruitment. For an increasing number of stocks under management, the climatological data analyses have helped explain the variability in recruitment. This bibliography includes these factors.

PB83-122705 PC **A12**/MF **A01**
National Marine Fisheries Service, Galveston, TX. Galveston Lab.

Shrimp and Redfish Studies, Bryan Mound Brine Disposal Site Off Freeport, Texas, 1979-1981. Volume I (B). Texas Coast Shrimp Catch and Effort Data Analysis.
Technical memo. (Final),
C. E. Comiskey. 1981, 256p NOAA-TM-NMFS-SEFC-65
Sponsored in part by Department of Energy, Washington, DC. Prepared in cooperation with Science Applications, Inc., Oak Ridge, TN. See also PB81-249583.

Four coastal areas along the northwestern Gulf of Mexico were assessed for brine discharge into nearshore waters. This project, 'Shrimp and Redfish Studies; Bryan Mound Brine Disposal Site off Freeport, Texas', deals with potential impacts of brine disposal from the Bryan Mound site.

8B. Cartography

N82-33795/7 PC **A05/MF A01**
Environmental Research Inst. of Michigan, Ann Arbor. Applications Div.
Cartographic Mapping Study.
Final Report, 20 Dec. 1981 - 20 Jun. 1982.
C. Wilson, R. Dye, and L. Reed. Jun 82, 78p NAS 1.26:170446, ERIM-160700-1-F, NASA-CR-170446
Contract NAS5-26820

The errors associated with planimetric mapping of the United States using satellite remote sensing techniques are analyzed. Assumptions concerning the state of the art achievable for satellite mapping systems and platforms in the 1995 time frame are made. An analysis of these performance parameters is made using an interactive cartographic satellite computer model, after first validating the model using LANDSAT 1 through 3 performance parameters. An investigation of current large scale (1:24,000) US National mapping techniques is made. Using the results of this investigation, and current national mapping accuracy standards, the 1995 satellite mapping system is evaluated for its ability to meet US mapping standards for planimetric and topographic mapping at scales of 1:24,000 and smaller.

PB83-108878 CP **T05**
Defense Mapping Agency Topographic Center, Washington, D.C. Dept. of Computer Services.
Variation of Coordinates System.
Software.
9 Sep 76, mag tape FSWEC-77/0142
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

The system uses the least squares method to adjust geodetic networks - triangulation, trilateration or traverse. Certain minimum conditions must be applied to the adjustment. Additional constraints are optional, as is weighting of the observation equations. The matrix routines are designed for the solution of large sparce matrices. A maximum of 6k stations can be adjusted. The edited output gives the adjusted geographic positions, universal transverse mercator coordinates, azimuths and distances over observed lines, L-values, residuals and root mean square. ...Software Description: The system is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 64K.

8C. Dynamic Oceanography

PB83-114017 PC **A17/MF A01**
Science Applications, Inc., McLean, VA.
Assessment of Tsunami Hazard Presented by Possible Seismic Events: Far-Field Effects.
Final rept. Mar-Nov 81,
Gerald T. Hebenstreit. Oct 81, 384p SAI-82-599-WA, TR-424-81-216-03
Contract AID/SOD/PDC-C-0404

The purpose of this study is to model the propagation of tsunamis from source regions off the west coast of South America to the continental shelf zone of Alaska, Japan, the Philippines, Australia, and New Zealand. The simulations were carried out by numerically solving the linear, inviscid equations for long waves. Potential generating areas were chosen by identifying seismic gaps in the Peru-Chile Trench area. Ocean bottom displacements in each source area were specified on the basis of representative earthquake parameters (depth, dip angle, fault length and width, slip displacement) chosen from an examination of historical seismicity patterns in the area. Areas of maximum offshore wave height were identified along each coastline in response to each earthquake/tsunami event. Several coastal areas were subjected to high concentrations of wave energy no matter where the source was located.

PB83-117614 PC **A06/MF A01**
Science Applications, Inc., Raleigh, NC.
Analysis of Current Meter Records at the Northwest Atlantic 2800 Metre Radioactive Waste Dumpsite.
Final rept.,
Peter Hamilton. 17 Jun 82, 101p EPA-520/1-82-002
Contract EPA-68-01-6235

In August, 1976, four current meter arrays were deployed for a period of three months at the Atlantic 2800 meter radioactive waste disposal site as part of a scientific survey by the U.S. Environmental Protection Agency to assess the environmental conditions at this formerly used site. The disposal site is located on the Continental Rise and is centered at 38 deg 30' N, 72 deg 06' W. The four arrays were placed in a rectangle near the periphery of the site, each with a current meter 5.1 meters off the bottom, with an additional meter located 96 meters from the bottom at the southwest mooring. The principal findings included a 3-4 cm/s southwesterly mean current observed near the bottom. The low frequency part of the spectrum is explained as bottom trapped topographic Rossby waves. The high frequency motions are dominated by inertial oscillations with a maximum amplitude of about 10 cm/s. The potential for sediment transport during the measurement period is considered very small based on the observed current speeds.

8E. Geodesy

PB83-108860 Mag Tape $175.00
Defense Mapping Agency Hydrographic Center, Washington, D.C. Applications Branch.
Mollweide Projection.
Software.
6 May 75, mag tape SW-AA1MCA, FSWEC-77/0150
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine computes X and Y coordinates in meters for the Mollweide projection from geographic positions. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 5K.

PB83-108886 Mag Tape $60.00
Defense Mapping Agency Hydrographic Center, Washington, D.C. Applications Branch.
Mercator to Geographic Position.
Software.
6 May 75, mag tape SW-AA1EPA, FSWEC-77/0151
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine converts X and Y coordinates of the mercator projection to geographic positions. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. Computer memory requirement is 5K.

PB83-108894 Mag Tape $95.00
Defense Mapping Agency Hydrographic Center, Washington, D.C. Applications Branch.
Transverse Mercator Projection.
Software.
6 May 75, mag tape SW-AA1LAA, FSWEC-77/0152
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine computes X and Y coordinates in meters for the transverse mercator projection from geographic positions. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1106 computer using the EXEC 8 operating system. The computer memory requirement is 2K.

PB83-108902 Mag Tape $95.00
Defense Mapping Agency Hydrographic Center, Washington, D.C. Applications Branch.
Transverse Mercator to Geographic Position.
Software.
6 May 75, mag tape SW-AA1EGA, FSWEC-77/0153
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine converts X and Y coordinates of the transverse mercator projection to geographic positions. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 5K.

PB83-108910 Mag Tape $95.00
Defense Mapping Agency Hydrographic Center, Washington, D.C. Application Branch.
Polyconic to Geographic Position.
Software.
6 May 75, mag tape SW-AA1MXA, FSWEC-77/0159
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 tract recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine converts X and Y coordinates of the polyconic projection to geographic positions. The routine is based on the American Polyconic Projection and is designed to work within the bounds of 85 degrees North to 85 degrees South and thirty degrees plus or minus from the Central Meridian. The projection is best used for large scale projections of small areas near or on the central meridian. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 5K.

PB83-108928 Mag Tape $95.00
Defense Mapping Agency Hydrographic Center, Washington, D.C. Applications Branch.
Oblique Mercator to Geographic Position.
Software.
6 May 75, mag tape SW-AA1LUA, FSWEC-77/0162
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine converts X and Y coordinates of the oblique mercator projection to geographic positions. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 5K.

PB83-108936 Mag Tape $95.00
Defense Mapping Agency Hydrographic Center, Washington, D.C. Applications Branch.

Skewed Orthomorphic Projection.
Software.
6 May 75, mag tape SW-AA1LLA, FSWEC-77/0168
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine computes X and Y coordinates in meters for the skewed orthomorphic projection from geographic position. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 2K.

PB83-108944 CP **T02**
Defense Mapping Agency Hydrographic Center, Washington, D.C. Applications Branch.
Distance and Azimuth.
Software.
6 May 75, mag tape SW-AA1EMA, FSWEC-77/0171
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine finds the distance between two points on an ellipsoid (the earth) along the geodesic (approximately great circle arcs) and the azimuths (in respect to the North Pole) between these points. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 1K.

PB83-108977 Mag Tape $35.00
Defense Mapping Agency Hydrographic Center, Washington, D. C. Applications Branch.
Lambert Conic Conformal (One Standard Parallel).
Software.
6 May 75, mag tape SW-AA1LGA, FSWEC-77/0096
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 tract recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine computes X and Y coordinates in meters for the Lambert conic conformal projection (one standard parallel) from geographic positions. ...Software Description: This subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 5K.

PB83-109025 Mag Tape $95.00
Defense Mapping Agency Hydrographic Center, Washington, D.C. Applications Branch.
Albers Equal Area Conic Projection.
Software.
6 May 75, mag tape SW-AA1LKA, FSWEC-77/0179
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine computes X and Y coordinates in meters for the Albers equal area conic projection from geographic positions. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 2K.

PB83-109041 Mag Tape $95.00
Defense Mapping Agency Hydrographic Center, Washington, D.C. Applications Branch.
Lambert Conic Conformal (Two Standard Parallels).
Software.
6 May 75, mag tape SW-AA1LEA, FSWEC-77/0166
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This subroutine computes X and Y coordinates in meters for the Lambert conic conformal projection (two standard parallels) from geographic positions. ...Software Description: The subroutine is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 2K.

PB83-109058 Mag Tape $95.00
Defense Mapping Agency Topographic Center, Washington, D.C. Dept. of Computer Services.
Helmert's Forward Computation.
Software.
7 Sep 76, mag tape SW-CT5HLF, FSWEC-77/0190
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

If the geographic coordinates of a point and the distance and forward azimuth along the geodesic to a second point are given, the program can compute the geographic positions of the second point and the back azimuth. ...Software Description: The program is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 3K.

PB83-109116 Mag Tape $95.00
Defense Mapping Agency Topographic Center, Washington, D.C. Dept. of Computer Services.
Edit of Sorted Raw Data.
Software.
21 Sep 76, mag tape SW-SRDEDT, FSWEC-77/0145
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This program is designed to edit a sorted raw data tape within a specified set of coordinate intervals. ...Software Description: The program is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. The computer memory requirement is 8K words.

PB83-119941 PC **A14**/MF **A01**
National Geodetic Survey, Rockville, MD.
Report on Surveys of Delaware-Maryland Boundaries,
Buford K. Meade. 1982, 321p NOAA-82101908
Library of Congress catalog card no. 82-12855.

This report contains brief discussions of the various surveys that have been performed to delineate the boundaries between the States of Delaware and Maryland. Descriptions, geographic positions, and State plane coordinates of the original monuments and new markers established along the boundaries are included as part of this report. Also included are the horizontal control data and descriptions of triangulation stations that were established at approximately 1-mile intervals in the vicinity of each boundary monument.

8G. Geology and Mineralogy

DE82008203 PC **A06**/MF **A01**
Department of Energy, Washington, DC. Office of Basic Energy Sciences.
Summary Outline of DOE Geoscience and Geoscience - Related Research.
Feb 82, 110p DOE/ER-0120
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Microfiche only after original copies are exhausted.

The Office of Basic Energy Sciences (OBES) supports long-range, basic research in those areas of the geosciences which are relevant to the nation's energy needs. The objective of the Geoscience program is to develop a quantitative and predictive understanding of geological, geophysical and geochemical structures and processes in the solid earth and in solar-terrestrial relationships. This understanding is to assure an effective knowledge base for energy resource recognition, evaluation and utilization in an environmentally acceptable manner. The work is carried out primarily in DOE laboratories and in universities, although some is conducted by other federal agencies and by the National Academy of Sciences. Principal areas of interest include: Geology, Geophysics, and Earth Dynamics; Geochemistry; Energy Resource Recognition, Evaluation and Utilization; Hydrologic and Marine Sciences; and Solar-Terrestrial/Atmospheric Interactions. (ERA citation 07:051877)

DE82009849 MF **A01**
Atomics International Div., Richland, WA. Energy Systems Group.
Preliminary Assessment of the Rate of Deformation in the Pasco Basin, South-Central Washington.
J. A. Caggiano. Apr 81, 8p RHO-BWI-SA-133
Contract AC06-77RL01030
Portions of document are illegible.
Available in microfiche only.

Preliminary results of integrating geologic, geodetic, and seismologic data are encouraging and support an average, slow rate of deformation under north-south compression since the Miocene (Caggiano and others, 1980). Data currently come from uplift rates of basalt in the Miocene and from monitoring contemporary processes. More information is needed on rates during the Pliocene and Quaternary, but acquisition of information will require additional time stratigraphic control which is currently being developed. Additional trilateration arrays are being established across mapped faults to determine whether slip is occurring, and if so, at what rate. Digital recording is being implemented for locally deployed seismometers so that the areas of rupture (seismic moment) and state of stress *(stress drop) can be determined for earthquakes that occur in basalt. Preliminary results indicate that deformation has occurred very slowly and may be expected to continue at a very slow rate. Such results currently indicate that the Hanford area of the Columbia Plateau appears to satisfy the criterion for tectonic stability. (ERA citation 07:056331)

DE82012220 MF **A01**
Lawrence Livermore National Lab., CA.
Magnitudes of Slip Along the Greenville Fault in the Diablo Range and Corral Hollow Areas.
J. J. Sweeney. Mar 82, 12p UCRL-87471, CONF-820355-1
Contract W-7405-ENG-48
Conference on earthquake hazards in the Eastern San Francisco Bay area, Hayward, CA, USA, 24 Mar 1982,
Portions of document are illegible.
Available in microfiche only.

Field investigations in recent years by Herd, Dibblee, and Lawrence Livermore National Laboratory personnel have established that the Greenville fault forms the eastern boundary to Livermore Valley and extends into the Diablo Range south of San Antonio Valley, a probable pull-apart structure. Gravity, magnetic, structural, and petrologic data indicate that the serpentinized ophiolite units at Cedar Mountain and Red Mountain were once continuous and are displaced dextrally along the Greenville fault by 9 km. The Livermore Oil Field marks the location of the buried western end of the Corral Hollow anticline which has been displaced about 2 km northward along the Greenville fault following deposition and folding of Plio-Pleistocene rocks. Further east, the Corral Hollow syncline has been displaced northward about 600 m along the Corral Hollow fault in a similar manner. (ERA citation 07:044871)

8H. Hydrology and Limnology

DE82008516 MF **A01**
Atomics International Div., Canoga Park, CA. Energy Systems Group.
Hydrology of the Separations Area.
M. J. Graham, M. D. Hall, S. R. Strait, and W. R. Brown. Jul 81, 132p RHO-ST-42
Contract AC06-77RL01030
Portions of document are illegible.
Best available copy from document source. Available in microfiche only.

The unconfined aquifer underlying the Separations Area is contained within the Ringold and Hanford formations. Hydraulic conductivity ranges from 3 to 3000 meters/day (9 to 10,000 feet/day), storage coefficients range from 0.002 to 0.07. The higher values are associated with the Hanford formation, the lower values with the Ringold formation. A textural unit near the bottom of the aquifer acts as a separate confined aquifer. Measured anisotrophy values range from 13 to 16. Artificial recharge from liquid waste disposal is estimated at 10 times the natural recharge to the Separations Area. The artificial recharge has created large ground-water mounds under U Pond and B Pond and induced two artificial flow systems. Horizontal gradients resulting from the ground-water mounds are up to 10 meters/kilometer (50 feet/mile); downward vertical gradients are as high as 10%. Travel time estimates from 200 West Area to the Columbia River range from 80 to 120 years. The prevalent chemical character of the aquifer is calcium bicarbonate. Sodium bicarbonate and calcium sulfate waters are also present. Contamination plumes indicate directions of flow to the east and southeast. (ERA citation 07:053137)

PB83-115436 PC **A04**/MF **A01**
Purdue Univ., Lafayette, IN.
ANSWERS (Areal Nonpoint Source Watershed Environment Response Simulation) User's Manual,
David B. Beasley, and Larry F. Huggins. Dec 81, 59p EPA-905/9-82-001
Grant EPA-G-005335

This report is an expanded and edited version of the Users Manual for the ANSWERS (Areal Nonpoint Source Watershed Environment Response Simulation) model, first published in September, 1980. ANSWERS is a distributed parameter model capable of predicting the hydrologic and erosion response of primarily agricultural watersheds. Particle-size distributions of the eroded sediment are available. The manual provides insights into model concepts, input requirements, output interpretation, and planning applications.

PB83-115964 PC **A09**/MF **A01**
Geological Survey, Helena, MT. Water Resources Div.
Water Resources Data, Montana, Water Year 1981. Volume 2: Columbia River Basin.
Water-data rept. (Annual) 1 Oct 80-30 Sep 81.
Jun 82, 186p USGS/WRD/HD-82/051, USGS-WDR-MT-81-2
See also Volume 1, PB82-127713. Prepared in cooperation with the State of Montana.

Water resources data for the 1981 water year for Montana consist of records of stage, discharge, and water quality of streams; stage, contents and water quality of lakes and reservoirs; and water levels in wells. Volume 2 of this report contains discharge records for 48 gaging stations; stage/contents for 3 lakes and reservoirs; water quality for 18 stations, 3 lakes; water levels for 14 observation wells. Also included are 30 crest-stage partial-record stations and 20 smaller reservoirs.

PB83-116095 PC **A99**/MF **A01**
Geological Survey, Oklahoma City, OK. Water Resources Div.
Water Resources Data for Oklahoma, Water Year 1980.
Water-data rept. (Annual) 1 Oct 79-30 Sep 80.
Jun 82, 623p USGS/WRD/HD-81/041, USGS-WRD-OK-80
See also PB81-212748. Prepared in cooperation with the State of Oklahoma.

Water resources data for the 1980 water year for Oklahoma consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes or reservoirs. This report contains discharge records for 138 gaging stations; stage and contents for 25 lakes or reservoirs; water quality for 77 gaging stations and 3 lakes; water levels for 43 wells. Also included are 44 crest-stage partial-record stations.

PB83-116111 PC **A19**/MF **A01**
Geological Survey, Baton Rouge, LA. Water Resources Div.
Water Resources Data Louisiana, Water Year 1981. Volume 1: Central and Northern Louisiana.
Water-data rept. 1 Oct 80-30 Sep 81.
Mar 82, 438p USGS/WRD/HD-81/021, USGS/WDR/LA-1
See also PB81-171621. Prepared in cooperation with the State of Louisiana.

Water resources data for the 1981 water year for Louisiana consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground water. This report, in three volumes, contains records for water discharge at 81 gaging stations (including stage for 76 of these stations); stage only for 37 gaging stations and 10 lakes; contents for 1 reservoir; water quality for 142 surface-water stations (including 35 gaging stations), 27 miscellaneous sites, and 10 lakes, and 286 wells; and water levels for 679 observation wells.

PB83-117689 PC **A08**/MF **A01**
Intermountain Forest and Range Experiment Station, Ogden, UT.
Streamflow Summaries from Twelve Tributaries of Farmington Creek, Davis County Experimental Watershed, Northern Utah,
Jan M. Pankey, and Norbert V. DeByle. 1982, 163p

Farmington Creek, the largest of several west-facing drainages in the mountainous terrain of the Davis County Experimental Watershed, consists of several small permanent tributaries. Twelve of these tributaries, ranging in size from 50 to 646 acres, were gaged and annual streamflow data taken and recorded for many years since 1939. Mean daily, monthly, and annual flows are tabulated for all years of record for each of these tributaries. Periods of record range from 5 to 21 years. A watershed description and topographic map accompany the data from each tributary.

PB83-118281 PC **A05**/MF **A01**
Geological Survey, Columbia, SC. Water Resources Div.
Techniques for Estimating Magnitude and Frequency of Floods in South Carolina,
Benjamin H. Whetstone. Feb 82, 86p USGS/WRI-82-1, USGS/WRD/WRI/82-072
Prepared in cooperation with South Carolina Dept. of Highways and Public Transportation.

Information is presented for estimating the magnitude and frequency of floods on streams in South Carolina. Flood-frequency characteristics for 151 gaging stations were related to basin characteristics by multiple regression techniques for each of four physiographic provinces. Equations were derived to estimate flood magnitudes at recurrence intervals ranging from 2 to 100 years on streams with drainage areas greater than 1.0 square mile. Examples demonstrate the procedure for computing flood-frequency discharge for sites on gaged and ungaged streams in South Carolina.

PB83-119180 PC **A07**/MF **A01**
Illinois State Environmental Protection Agency, Springfield. Div. of Water Pollution Control.
Volunteer Lake Monitoring, 1981.
Annual rept.,
Donna F. Sefton, and John R. Little. Jun 82, 150p IEPA/WPC/82-006

A Volunteer Lake Monitoring Program was initiated by the Illinois EPA in 1981. Citizens were trained to measure water transparency using a Secchi disc. They also measured total depth and recorded field observations from a boat at three sites on their chosen lake. This report details the methodology and results for the 1981 volunteer program and contains a primer to provide the non-technical person with a basic understanding of Illinois lakes, factors affecting their water quality, and actions that can be taken to protect and enhance them.

PB83-119495 PC **A08**/MF **A01**
Northeastern Forest Experiment Station, Broomall, PA.
Stream Water Quality in the Coal Region of Ohio.
General technical rept. (Final),
Kenneth L. Dyer. 1982, 155p NEFES/83/9, FSGTR-NE-75
Sponsored in part by Industrial Environmental Research Lab., Cincinnati, OH.

The report includes data collected in 1977-79 from 19 small streams that drain unmined watersheds and 50 that drain areas where coal has been surface mined. The analysis includes common ions, alkalinity, acidity, pH, 16 trace elements, 5 nitrogen and phosphorous species, specific conductance, suspended solids, turbidity, settleable matter, water temperature, and estimated discharge.

PB83-119883 PC **A15**/MF **A01**
Geological Survey, Columbia, SC. Water Resources Div.
Water Resources Data for South Carolina, Water Year 1981.
Water-data rept. (Annual) 1 Oct 80-30 Sep 81.
Jul 82, 349p USGS/WRD/HD-81/046, USGS-WRD-SC-81-1
See also PB82-127127. Prepared in cooperation with the State of South Carolina.

Water resources data for the 1981 water year for South Carolina consists of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels in wells. This report contains discharge records for 85 gaging stations; stage-only records for 6 gaging stations; stage and contents for 11 lakes and reservoirs; water quality for 36 gaging stations; and water levels for 47 observation wells. Also included are 44 crest-stage partial-record stations.

PB83-119917 PC **A08**/MF **A01**
Illinois State Environmental Protection Agency, Springfield. Div. of Water Pollution Control.
Water Resource Data and Preliminary Trend Analysis for the Blue Creek Watershed Project, Pike County, Illinois - Phase II,
Thomas E. Davenport. Sep 82, 173p IEPA/WPC/82-008

The purpose of this report is to present and briefly interpret preliminary trends in water quality data collected from project inception thru September 30, 1981 as part of the Blue Creek Watershed project. The primary purpose of this monitoring and evaluation project is to determine the actual yield of pollutants from a variety of agricultural practices to downstream receiving water and its effect upon the water quality and reasonable uses of the water resources. Monitoring and evaluation of actual Resource Management System implementation progress on sub-watersheds and yield of pollutants to the major tributary stream and public water supply lake will allow a reliable comparison of low and high-cost practices and downstream yield reductions.

PB83-119958 PC **A22**/MF **A01**
Geological Survey, St. Paul, MN. Water Resources Div.
Water Resources Data for Minnesota, Water Year 1981. Volume 2. Upper Missippi and Missouri River Basins.
Water-data rept. (Annual) 1 Oct 80-30 Sep 81, 502p USGS-WRD-MN-81-2, USGS/WRD/HD-82/057
Prepared in cooperation with the State of Minnesota. See also PB80-202963.

Water-resources data for the 1981 water year for Minnesota consist of records of stage, discharge and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality in wells and springs. This volume contains discharge records for 70 gaging stations; stage and contents for 8 lakes and reservoirs; water quality for 41 stream stations, 3 partial-record stream stations, 4 partial-record lake stations, and 98 wells; and water levels for 267 observation wells. Also included are 109 high-flow partial-record stations and 27 low-flow partial-record stations.

PB83-119966 PC **A99**/MF **A01**
Geological Survey, Urbana, IL. Water Resources Div.
Water Resources Data Illinois, Water Year 1981. Volume 1. Illinois Except Illinois River Basin.
Water-data rept. (Annual) 1 Oct 80-30 Sep 81.
683p USGS-WRD-IL-81-2, USGS/WRD/HD-81/053
Prepared in cooperation with the State of Illinois. See also Volume 2, PB83-119974.

Water resources data for the 1981 water year for Illinois consist of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and water levels and water quality of ground-water wells. This volume contains records for water discharge at 94 gaging stations; stage at 17 gaging stations; stage and contents at 3 lakes and reservoirs; stage only at 1 lake station; and water quality at 121 gaging stations and 26 wells. Also included are data for 13 crest-stage partial-record stations and 22 low-flow partial-record stations.

PB83-119974 PC **A23**/MF **A01**
Geological Survey, Urbana, IL. Water Resources Div.

Water Resources Data for Illinois, Water Year 1981. Volume 2. Illinois River Basin.
Water-data rept. (Annual) 1 Oct 80-30 Sep 81.
Jul 82, 547p USGS-WRD-IL-81-2, USGS/WRD/HD-81/054
Prepared in cooperation with the State of Illinois. See also PB82-106311, and Volume 1, PB83-119966.

Water resources data for the 1981 water year for Illinois consist of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and water levels and water quality of ground-water wells. This volume contains records for water discharge at 82 gaging stations; stage only at 2 gaging stations; stage only at 3 lake stations; water quality at 96 gaging stations and 10 wells; and water levels at 3 observation wells. Also included are data for 18 crest-stage partial-record stations.

PB83-120188 PC **A99**/MF **A01**
Geological Survey, Salt Lake City, UT. Water Resources Div.
Water Resources Data for Utah, Water Year 1981.
Water-data rept. (Annual) 1 Oct 80-30 Sep 81.
Jun 82, 724p USGS-WRD-UT-81-1, USGS/WRD/HD-82/044
Prepared in cooperation with the State of Utah. See also PB82-108606.

Water resources data for the 1981 water year for Utah consist of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and water levels and water quality of ground water. This report contains discharge records for 274 gaging stations; stage and contents for 19 lakes and reservoirs; water quality for 65 hydrologic stations, and 375 wells; miscellaneous temperature measurements and field determinations for 181 stations; and water levels for 36 observation wells.

PB83-122713 PC **A07**/MF **A01**
Northeastern Forest Experiment Station, Broomall, PA.
Stream Water Quality in the Coal Region of Tennessee.
General technical rept. (Final),
Kenneth L. Dyer. 1982, 143p NEFES/83-7, FSGTR-NE-77
Sponsored in part by Industrial Environmental Research Lab., Cincinnati, OH.

The report includes data collected in 1977-79 from 17 small streams that drain unmined watersheds and 51 that drain areas where coal has been surface mined include common ions, alkalinity, acidity, pH, 16 trace elements, 5 nitrogen and phosphorous species, specific conductance, suspended solids, turbidity, settleable matter, water temperature, and estimated discharge.

PB83-122739 PC **A09**/MF **A01**
Battelle Pacific Northwest Labs., Richland, WA.
User's Manual for the Instream Sediment-Contaminant Transport Model SERATRA.
Final rept. Apr 78-Jan 80,
Y. Onishi, and S. E. Wise. May 82, 195p EPA-600/3-82-055
Contract EPA-68-03-2613

This manual guides the user in applying the sediment-contaminant transport model SERATRA. SERATRA is an unsteady, two-dimensional code that uses the finite element computation method with the Galerkin weighted residual technique. The model has general convection-diffusion equations with decay and sink/source terms with appropriate boundary conditions. A sediment transport model, a dissolved contaminant transport submodel, and a particulate contaminant transport submodel are coupled to include the effects of sediment-contaminant interaction. SERATRA is an integral part of the Chemical Migration and Risk Assessment Methodology, which predicts overland and instream pesticide migration and fate to assess the potential short- and long-term impacts on aquatic biota in receiving streams.

PB83-124446 PC **A19**/MF **A01**
Geological Survey, Lakewood, CO. Water Resources Div.
Water Resources Data for Colorado, Water Year 1981. Volume 3. Dolores River Basin, Green River Basin, and San Juan River Basin.
Water-data rept. (Annual) 1 Oct 80-30 Sept 81.
Jun 82, 450p USGS-WRD-CO-81-3, USGS/WRD/HD-82-036
Prepared in cooperation with the State of Colorado. See also PB82-188293.

Water-resources data for Colorado for the 1981 water year consists of records of stage, discharge, and water quality of streams; stage, contents and water quality of lakes and reservoirs, and water levels and water quality of wells and springs. This report (Volumes 1, 2, and 3) contains discharge records for about 460 gaging stations, stage and contents of 22 lakes and reservoirs, 4 partial-record low-flow stations, 30 crest-stage partial-record stations, and 50 miscellaneous sites; water quality for 163 gaging stations and 300 miscellaneous sites; and water levels for 55 observation wells.

PB83-124453 PC **A03**/MF **A01**
Swedish Council for Building Research, Stockholm.
Flow Balancing Method for Stormwater and Combined Sewer Overflow,
Hans Soederlund. 1982, 30p ISBN-91-540-3765-4, D17:1982

Treating stormwater discharges or combined sewer overflows, CSO, is next to impossible without sufficient compensation or balancing of the strong peak flow variations. The Swedish inventor Karl Dunkers and the Swedish consultants KM have elaborated a new low-cost flow balancing method. Floating tanks consisting of pontoons with reinforced plastic curtains hanging down and anchored to the bottom of the recipient are arranged into a horizontally working balancing system according to the plug flow principle. The surrounding body of the recipient water is utilized as a balancing medium. This publication describes briefly the research work and the development of the method into three full-scale operating plants for balancing and phosphorus removal treatment of stormwater discharges in inland lakes.

PB83-124651 PC **A03**/MF **A01**
Geological Survey, Albany, NY. Water Resources Div.
Geology and Ground-Water Resources of Oswego County, New York.
Water-resources investigations (Final) 1979-80,
Todd S. Miller. 1982, 43p USGS/WRD/WRI-82-071, USGS/WRI-81-60
Prepared in cooperation with Oswego County Planning Board.

Unconsolidated deposits of Pleistocene and Holocene age form a nearly continuous cover in Oswego County. Pleistocene deposits consist of lodgement and ablation tills; outwash; kame, beach, and wave-delta sand and gravel; and lacustrine sand, silt, and clay. Holocene deposits consist of peat and muck deposited in wetlands and alluvial silt, sand, and gravel deposited in stream valleys. Unconsolidated deposits contain sufficient water for domestic and small farm needs except in areas mantled by silt and clay. Sand and gravel deposits are the best source of large quantities of water. Aquifers in glacial outwash are common in the eastern Tug Hill region, whereas kame, esker-kame, and beach aquifers predominate in the eastern and central regions. Shallow wells in bedrock generally have water of fair to good quality, but mineral content increases with depth.

PB83-124883 PC **A20**/MF **A01**
Geological Survey, Indianapolis, IN. Water Resources Div.
Water Resources Data Indiana, Water Year 1981.
Water-data rept. (Annual) 1 Oct 80-30 Sep 81.
Sep 82, 464p USGS-WRD-IN-81-1, USGS/WRD/HD-82-050
See also PB82-135930. Prepared in cooperation with the State of Indiana and Other Agencies.

Water resources data for the 1981 water year for Indiana consists of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and water levels in wells. This report contains discharge records for 195 gaging stations, stage and contents for 12 lakes and reservoirs, releases from 6 flood control reservoirs, water quality for 51 gaging stations, and water levels for 84 observation wells. Also included are 95 crest-stage partial-record stations and 42 low-flow partial-record stations.

PB83-125179 PC **A03**/MF **A01**
North Carolina Water Resources Research Inst., Raleigh.
A Rapid, Low-Cost Technique for Estimating Peak Flow for Selected Flood Events,
Nelson R. Nunnally. May 82, 42p UNC-WRRI-82-180, W83-00613, OWRT-A-119-NC(1)
Contract DI-14-34-0001-1135

A regionalized streamflow estimation technique was developed for North Carolina and Virginia for estimating 2-, 10-, and 25-year return interval peak flows. Separate equations were generated for the mountain, piedmont, and coastal plain regions, and for urbanized watersheds. Comparison with previous techniques used in North Carolina indicated that the new equations produce more accurate peak discharge estimates in most instances. If return intervals, basin size, and lag are held constant, urban basins produce the largest discharge (followed by mountain, piedmont, and coastal plain).

PB83-125211 PC **A04**/MF **A01**
Kansas Water Resources Research Inst., Manhattan.
Effect of Length of Fallow Period on Water Storage and Drainage.
Project completion rept. 1 Jul 79-31 Dec 81,
James K. Koelliker, and Freddie R. Lamm. Dec 81, 58p W83-00618, OWRT-A-096-KAN(1)
Contract DI-14-34-0001-9018

Double fallowing involves the addition of another year to the 14-15 month fallow period between winter wheat crops. A field experiment was carried out to hydrologically evaluate the effect of tillage practices and the amount of residue at the beginning of fallow on the amount of water storage and drainage. Tillage practices minimizing the number of tillage operations (by use of chemicals for weed control and residue maintenance) provided the greatest water storage and drainage. Deep chiseling at the start of the fallow period added further to water storage and drainage. Models are described for estimating double fallow capability by continuous computer simulation.

PB83-126565 PC **A05**/MF **A01**
Northeastern Forest Experiment Station, Broomall, PA.
Stream Water Quality in the Coal Region of Virginia.
Final rept.,
Kenneth L. Dyer. 1982, 82p FSGTR-NE-68, NEFES/83-24

Data collected in 1977-79 from 12 small streams that drain unmined watersheds and 19 that drain areas where coal has been surface mined include common ions, alkalinity, acidity, pH, 16 trace elements, 5 nitrogen and phosphorus species, specific conductance, suspended solids, turbidity, setteable matter, water temperature, and estimated discharge.

PB83-127837 PC **A20**/MF **A01**
Geological Survey, Doraville, GA. Water Resources Div.
Water Resources Data Georgia, Water Year 1981.
Water-data rept. (Annual) 1 Oct 80-30 Sep 81.
Jun 82, 459p USGS/WRD/HD-81/049, USGS-WDR-GA-81-1
See also report for 1980, PB81-245250.Prepared in cooperation with the State of Georgia and other Federal agencies.

Water resources data for the 1981 water year for Georgia consists of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and ground-water levels. This report contains discharge records of 109 gaging stations; stage for 10 gaging stations; stage and contents for 17 lakes and reservoirs; water quality for 22 continuous stations, 131 periodic stations and miscellaneous sites; peak stage and discharge only for 106 crest-stage partial-record stations and 4 miscellaneous sites; measurements of discharge at 25 low-flow partial-record stations and 57 miscellaneous sites; and water levels of 28 observation wells.

PB83-854422 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.

Waterway Channels: Degradation and Improvements. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 125p

This bibliography contains citations concerning waterway channel improvements, including dredging technology. Channel design and design improvements are discussed. The degradation of channels and the causes of degradation, including tide currents and shoaling, are considered. (Contains 107 citations fully indexed and including a title list.)

PB83-854620 PC **N01/MF N01**
National Technical Information Service, Springfield, VA.
Soil Salinity: Irrigation Practices and Effects on Crops and Groundwater. 1977-November, 1982 (Citations from the Selected Water Resources Abstracts Data Base).
Rept. for 1977-Nov 82.
Nov 82, 146p
Prepared in cooperation with Office of Water Research and Technology, Washington, DC.

This bibliography contains citations concerning the effects on crops and groundwater from irrigation waters having high salinity. The salt tolerance of crops, including beans, wheat and citrus fruits, are examined. Soil salinity, groundwater salinity, and river and stream salinity are discussed. The sources of the brackish water are also considered. (Contains 104 citations fully indexed and including a title list.)

81. Mining Engineering

DE82003015 MF **A01**
United Technologies Research Center, East Hartford, CT.
Investigation of Coal Devolatilization: Kinetics and Product Characterization. Second Quarterly Report, 23 May 1981-23 August 1981.
D. J. Seery, and J. D. Freihaut. 1981, 95p DOE/MC/16221-T4
Contract AC21-81MC16221
Portions of document are illegible.
Available in microfiche only.

This report presents work performed in the second quarter of Contract DE-AC21-81MC16221 for an investigation of coal devolatilization. The objectives of this study are to determine the relationship between coal structure and devolatilization and the effects of heating rate, final temperature, ambient pressure and particle size on the devolatilization process. This report discusses elemental analysis results, techniques of structural characterization by infrared absorption, infrared analysis of samples and initial results of thermal devolatilization experiments performed with several coals. (ERA citation 07:056026)

DE82003730 PC **A06/MF A01**
Southwest Research Inst., San Antonio, TX.
Evaluation of Potential Coal Interface-Sensing Techniques for Extended-Depth-Guided Auger Cutterhead.
O. Tranbarger, and M. B. Treuhaft. Sep 81, 110p DOE/ET/12213-T3
Contract AC01-76ET12213
Portions of document are illegible.
Microfiche only after original copies are exhausted.

Development of a guided cutterhead to provide an extended-depth coal augering capability requires new technology for: (1) sensing the coal/non-coal interface at the cutterhead; (2) two-way telemetry communications with the cutterhead for position sensing and guidance control; and (3) positive steering control of the cutterhead during boring. This report treats the sensing aspect of the requirement. Several potential coal interface sensing techniques are evaluated to determine the feasibility of applying each technique in a practical guided auger cutterhead system. System requirements and specifications for an extended-depth guided auger are defined and a list of potential sensing techniques and system application concepts are established. Each technique is evaluated with respect to state-of-the-art, design, performance, and cost criteria. Four interface boundary conditions are considered: the roof, the floor, the rib, and the forward region. The roof and rib are emphasized because of their primary relationship to the augering operation and to practical strategies for guiding the auger through a thin horizontal coal seam. No single sensor was found to satisfy all system requirements; however, a combination of three techniques offers good promise. A discussion of these three techniques as well as the other techniques investigated is given and their merits and limitations are examined. Recommendations for further development are presented. (ERA citation 07:042187)

DE82007991 MF **A01**
West Virginia Univ., Morgantown. Dept. of Physics.
X-Ray Diffraction and Scattering Studies of Coal Constituents. Semiannual Technical Progress Report, July 1, 1981-December 31, 1981.
A. S. Pavlovic, and J. J. Renton. 15 Jan 82, 41p DOE/PC/30225-T2
Contract FG22-80PC30225
Available in microfiche only.

A procedure has been outlined wherein the positions and areas of the peaks of the Fourier transform of the halo pattern of coals are calibrated against known properties of the coals. It is shown that this calibration can be used to make a proximate analysis of unknown coals with results as good as the conventional methods. There are several advantages which this technique has over conventional techniques: (1) Sample preparation is simple; and (2) it can be performed quickly. It also offers the possibility of leading to more fundamental information about the structure of coal if the Fourier transform characteristics can be related to the structure of coal. Finally, this technique offers a means of characterizing and/or identifying other amorphous materials. (ERA citation 07:042142)

DE82011551 PC **A07/MF A01**
Department of Energy, Washington, DC.
Contracts for Field Projects and Supporting Research on Enhanced Oil Recovery and Improved Drilling Technology. Progress Review No. 26.
B. Linville. Jan 82, 149p DOE/BETC-81/4
Portions of document are illegible.

Highlights of progress during the quarter ending September 30, 1981 are summarized. Field projects and supporting research in the following areas are reported: chemical flooding; carbon dioxide injection; thermal processes/heavy oil (steam and in-situ combustion); resource assessment technology; extraction technology; environmental; petroleum technology; microbial enhanced oil recovery; and improved drilling technology. A list of BETC publications with abstracts, published during the quarter is included. (ERA citation 07:042264)

DE82012525 PC **A08/MF A01**
Georgia Inst. of Tech., Atlanta. School of Mechanical Engineering.
3-D Thermodynamic Model of Underground Coal Gasification in Eastern Thin-SEAM Coals. Final Report, Task 19, October 1, 1979-December 31, 1980.
T. L. Eddy. Dec 81, 156p DOE/MC/11284-1160
Contract AM21-79MC11284
Portions of document are illegible.

The thermodynamic modeling of underground coal gasification (UCG) is a very complex problem. We have just completed a survey of current status of UCG models. Models can be applied to the air bubble, initial linking, combustion link enhancement, or forward gasification phase. Chemical reactions can be treated as local, distributed, or overall phenomena. Heat transfer can include wall conduction, bulk gas convection in a cavity or porous zone, and radiation with an optically thick, translucent, or optically thin gas. Sloughing or swelling of the wall material as well as the influx of water may be treated in various ways. Most models employ several basic concepts or equations and utilize one or two dominant mechanisms to obtain a model which is tenable with computer memory and run time limitations. Models employing basic constitutive equations plus chemical reaction subroutines are therefore limited to the number of finite difference nodes which can be used and hence have geometry definition limitations, as well as process limitations. The Lawrence Livermore National Labs model, which is one of the better models available today, is limited to 2-Dimensions (thin seam only) and requires input data based on field test output data to obtain a reasonable match of cavity shape. Perhaps the most comprehensive effort under way is at ARCO, where it appears that a finite element program will include almost all aspects of the UCG problem and will require the use of a Cray or equivalent super computer which uses a CDC Cyber 76 or equivalent, as an input/output processor. (ERA citation 07:049004)

PB83-107979 PC **A03/MF A01**
National Research Council, Washington, DC.
Assessing Mineral and Energy Resource Potential: A Report on a Workshop on Data Requirements, Data Sources, and Assessment Methodologies for Evaluating Undiscovered Resources.
Final rept.
Aug 82, 41p
See also PB83-107987. Sponsored in part by Bureau of Land Management, Washington, DC.

Chapter 1, the Summary, contains the overall committee findings and recommendations. Chapter 2, the Introduction, gives background information on BLM management responsibilities, the purposes and objectives of COMRE, and the scope of this project. Chapter 3 evaluates the workshop presentations on various resources, describes data requirements for assessing the resource potential of each, and suggests appropriate data sources and assessment methodologies and techniques. The report emphasizes assessment data requirements and sources because these topics seem to be of most direct relevance to BLM. Assessment techniques are also discussed because they were an integral part of the workshop, but extensive technical discussions on the variety of assessment techniques were not anticipated for this project. Chapter 4 discusses how federal and state agencies can assist BLM in its mission. Chapter 5 discusses the evaluation of geologic hazard potential in relation to resource potential assessments, another area of concern and activity for BLM. The relationship between mineral development and the geologic hazard potential of the development is also discussed.

PB83-107987 PC **A18/MF A01**
National Research Council, Washington, DC.
Appendix to Assessing Mineral and Energy Resource Potential: Proceedings of a Workshop on Data Requirement, Data Sources, and Assessment Methodologies for Evaluating Undiscovered Resources - Denver, Colorado, April 26-28, 1982.
Final rept.
Aug 82, 407p
See also PB83-107979. Sponsored in part by Bureau of Land Management, Washington, DC.

This volume contains the proceedings of a workshop held in Denver, Colorado, on April 26-28, 1982, by the Committee on Mineral Resource Evaluation (COMRE). The committee was formed in response to a request from the Bureau of Land Management that the NRC undertake an overview of the state-of-the-art of mineral and energy resource potential assessment. The COMRE workshop, which examined data requirements, data sources, and assessment methodologies for evaluating undiscovered resource potential, represents the major activity of this project toward fulfilling the BLM request.

PB83-111278 PC **A02/MF A01**
Bureau of Mines, Reno, NV. Reno Research Center.
Flotation of Rare Earths from Bastnaesite Ore.
Rept. of investigations/1982,
E. Morrice, and M. M. Wong. Aug 82, 19p BUMINES-RI-8689

As part of its efforts to maximize process efficiency and decrease energy requirements in mineral processes, the Federal Bureau of Mines has investigated methods for beneficiating bastnasite ores from Mountain Pass, Calif. The results of a bench-scale study on the flotation of bastnasite ore are presented. Flotation at a pulp temperature of 40 to 45C yielded a cleaner concentrate containing 58.7 pct RE2P3 at a rare-earth recovery of 67 pct. These result are comparable to those reported for the commercial beneficiation method in which the pulp is heated to boiling before flotation. An attempt was also made to recover a barite flotation concentrate from the bastnasite rougher tailing. Concentrates containing only 70 pct barite were obtained.

PB83-112854 PC **A05/MF A01**
National Inst. for Occupational Safety and Health, Cincinnati, OH. Div. of Surveillance, Hazard Evaluations and Field Studies.

Phase I Report on Control Technology Assessment of Ore Beneficiation.
Technical rept.,
William F. Todd. Aug 80, 90p

A preliminary assessment of hazard control technology in siliceous and lead ore beneficiation is presented. Various ore processing operations are described, including transport and loading, crushing and grinding, sizing, scrubbing and washing, gravity concentration, froth flotation, basic flotation circuits, extractive metallurgy, and pyrometallurgy. Available information on copper, lead, and siliceous ore beneficiation processes is reviewed. Also discussed are health hazards in the industry and control technology used to reduce noxious waste products. The author recommends additional evaluations of control technologies used in siliceous and lead ore beneficiation.

PB83-115865 PC **A13**/MF **A01**
Rockwell International, Cedar Rapids, IA. Collins Government Avionics Div.
A Communication and Monitoring System for an Underground Coal Mine, Iron Ore Mine, and Deep Underground Silver Mine.
Open file rept. Jun 73-Mar 78,
Alan A. Bergeron, R. L. Collins, and J. L. Michels. Nov 81, 293p BUMINES-OFR-156-82
Contracts S0133035, J0377076

Advanced communication and monitoring systems were developed and demonstrated in three underground mines representing different mining techniques, geographical areas, and material mined. The first was a large coal mine in western Pennsylvania using room-and-pillar techniques and continuous mining methods. The system developed provided private telephone channels, environmental monitoring, and control of underground equipment, all on a single coaxial cable, with all system operations under the direction of a minicomputer. The second was a magnetite ore mine in eastern Pennsylvania that used block caving mining techniques. A radio system was developed that provided two-way communications between trackless vehicles and roving personnel. A unique system of uhf-vhf repeaters combined with a 'leaky-feeder' transmission line offered operational and emergency features not previously found in mine communication systems. The third was a deep silver mine in the Cour d'Alene district of Idaho. This system utilizes a single wire pair to provide up to 14 voice channels. A combination of PBX, telephone carrier systems, and intercoms offered private conversations, selective signaling, and emergency backup communications.

PB83-118612 PC **A07**/MF **A01**
Texas A and M Univ., College Station. Ocean Engineering Program.
An Economic Analysis of a Pioneer Deep Ocean Mining Venture,
John E. Flipse. Aug 82, 143p COE-262, TAMU-SG-82-201, NOAA-82082401
Grant NA81AA-D-00092

A 3 million ton per year, three metal, vertically integrated, ocean exploration, mining, transportation and ore-processing and metal-marketing system is defined and the capital and operating costs estimated in 1980 U.S. dollars. A basic return-on-investment pay-out analysis model is presented with several alternate cases investigated. A series of tests is performed to determine the system's sensitivity to realistic variations of key costs and schedule.

PB83-119149 PC **A09**/MF **A01**
Canyon Research Group, Inc., Westlake Village, CA.
Standardization of Controls for Roof Bolter Machines. Phase I: Human Factors Engineering Analysis.
Open file rept. 15 Sep 79-30 Sep 80,
Martin Helander, Ernest J. Conway, William Elliott, and Richard Curtin. Oct 80, 193p BUMINES-OFR-170-82
Contract HO292007

The objective of this study is to propose standardized arrangements for controls in roof bolters. It is expected that standardized control arrangements would increase safety, minimize training requirements, and promote productivity. This report provides a human factors analysis of roof bolter controls. Preliminary standards for control design include the adoption of design criteria such as functional grouping of controls; sequencing controls according to order of operation; standardizing control motion directions; and standardizing actuation force requirements, control sizes, and interspacing. The proposed control arrangements were reviewed by roof bolter manufacturers and MSHA roof control experts; the responses were favorable.

PB83-119370 PC **A04**/MF **A01**
Forest Products Lab., Madison, WI.
Wood Products Use in Coal Mining.
Open file rept. 21 Apr 80-1 Apr 82,
Christopher D. Risbrudt, and Robert Chamberlin. 1 Apr 82, 59p BUMINES-OFR-177-82
Contract J0205049

Because of the important role of wood products in coal mining, and the relative lack of information on quantities and types used, this study had several objectives. First, to provide an estimate of the present use of wood products in coal mining, with emphasis on underground mines where wood usage is greatest. Second, to gain information on the availability of wood products, and any associated problems to the coal mining industry. Third, to estimate the cost of wood products peculiar to mining. Fourth, to make projections of future consumption of wood products used in mining. In this study, over 220 mines provided data by questionnaire. Wood use per ton of underground coal was found to vary substantially by mining process and region.

PB83-119388 PC **A06**/MF **A01**
Engineers International, Inc., Downers Grove, IL.
Boulder Handling and Blasting for Greater Safety and Efficiency in Crushers.
Open file rept. Sep 79-Aug 81,
Michael F. Dunn, Francis S. Kendorski, and Swapan Bhattacharya. Nov 81, 123p BUMINES-OFR-171-82
Contract J0100007

A study was carried out to identify and develop improved techniques to alleviate a major cause of accidents and work stoppages when an oversize rock or boulder lodges in the throat of a crusher. The configurations and operations of various crusher types and sources of boulders in a mining operation are described and a detailed review is made of mining, quarrying, and construction regulations for all States, Canada, and the Federal Government for applicable provisions. Representative mines were visited and other operations were contacted to determine boulder handling techniques where it was found that blasting techniques included mudcapping, bombs, and blockholing, often done crudely and inefficiently with poor practices. Various mechanical systems were used such as hooks on overhead cranes, impact hammers, and grapplers.

PB83-119404 PC **A06**/MF **A01**
Bureau of Mines, Washington, DC.
Premining Investigations for Hardrock Mines. Proceedings: Bureau of Mines Technology Transfer Seminar, Denver, Colorado, September 25, 1981.
Information circular/1982.
Sep 82, 102p BUMINES-IC-8891
Library of Congress catalog card no. 82-600057.

These proceedings consist of papers presented at a Bureau of Mines Technology Transfer Seminar in September 1981 for the purpose of disseminating recent advances in mining technology in the area of premining research. The introduction and descriptive papers discuss techniques and instrumentation used in premining research for metal and nonmetal mining and shaft design and borehole control for premine planning.

PB83-119412 PC **A02**/MF **A01**
Bureau of Mines, Pittsburgh, PA. Pittsburgh Research Center.
How to Evaluate Longwall Dust Sources with Gravimetric Personal Samplers.
Information circular/1982,
Steven J. Page, Robert A. Jankowski, and Fred N. Kissell. Sep 82, 20p BUMINES-IC-8894
Library of Congress catalog card no. 82-600229.

Longwall double-drum shearers frequently have difficulty complying with the 2.0 mg/cubic meter dust standard and, therefore, require the use of effective dust controls. However, before dust controls can be implemented effectively, the major individual dust sources must be determined and their relative severity evaluated. The Bureau of Mines has recently developed a sampling strategy, based upon short-term gravimetric sampling, that can identify the major dust sources contributing to the shearer operator's exposure. This technique utilizes approved gravimetric sampling equipment already available to all mine operators and can be performed by two people in 2 days. Five examples, including data analysis, are discussed with respect to various cutting sequences. In addition, typical dust source contributions obtained from studies of double-drum shearer operations regularly in compliance are included. Mine operators can thereby compare their dust source evaluation results with those from these longwalls.

PB83-120170 PC **A14**/MF **A01**
Hittman Associates, Inc., Lexington, KY. Appalachian and Midwestern Regional Office.
Impact of Surface Mining on Soil Compaction in the Midwestern U.S.A.
Open file rept. 3 Jul 80-28 Feb 82,
Steve C. Albrecht, and E. Raymond Thompson. 28 Feb 82, 319p BUMINES-OFR-174-82
Contract J0208016

The study revolves around a unique field sampling program targeted at four mine sites using four distinct types of soil movement of midwestern prime farmlands. Through the preparation of a report for use as a guidebook, an assessment is made of the degree to which surface mining operations contribute to the soil compaction problem. The report is formulated through the use of field study data as well as information gathered in an intense literature review. The report centers on applying collected data to practical field applications.

PB83-120261 PC **A04**/MF **A01**
Foster-Miller Associates, Inc., Waltham, MA.
Sprayfan System - Installation and Operation Manual - Volume II.
Open file rept. Jul 77-Oct 81,
Steven K. Ruggieri. Oct 81, 59p BUMINES-OFR-146(1)-82
Contract H0230023
See also PB-277 987, and Volume 3, PB83-120279.

This report describes the use of the sprayfan auxiliary ventilation system for methane and dust control on continuous miner sections. The sprayfan auxiliary ventilation system is a modified water spray system that directs intake air to and across the front of a continuous miner to prevent buildup of methane gas and dust concentrations. The report describes the practical aspects of the system including description and capabilities, design, installation, operation, and maintenance.

PB83-120279 PC **A05**/MF **A01**
Foster-Miller Associates, Inc., Waltham, MA.
Sprayfan System - Results of Mine Testing - Volume III.
Open file rept. Jul 77-Oct 81,
W. E. Schroeder. Oct 81, 96p BUMINES-OFR-146(2)-82
Contract H0230023
See also Volume 2, PB83-120261.

Two underground installations of the sprayfan system are described and evaluated. The report describes a simple method to determine the most economical application of ventilation for face methane control, the effect of place variables (primary ventilation, auxiliary ventilation, seam height, etc.) on methane concentrations, and the correlation of methane concentrations with brattice setback. The results are used to suggest a safer and more economical approach to face methane control.

PB83-120378 PC **A24**/MF **A01**
Pennsylvania State Univ., University Park. Dept. of Mineral Engineering.
Mine Power Systems. Volume I.
Contract research rept. 1 Oct 74-31 May 81,
Lloyd A. Morley. 31 Jan 82, 569p BUMINES-OFR-178(1)-82
Contract J0155009
See also Volume 2, PB83-120386.

This seven-chapter document is the first volume of a two-volume report that presents a comprehensive outline of coal mine electrical power systems from theory to practice. Together, the two volumes contain the vital aspects that go into planning and designing a mine power system. After a short introductory chapter, chapter 2 discusses the history of electrical use in

mining and introduces typical mine power system arrangements. Chapters 3-5 supply basic information on electrical theory, circuit analysis, and motors. Chapters 6-7 detail unique aspects of mine power systems. Elements of surface and underground use are included in all chapters. An index concludes volume I and is cross referenced to both report volumes.

PB83-120386 PC **A23**/MF **A01**
Pennsylvania State Univ., University Park. Dept. of Mineral Engineering.
Mine Power Systems. Volume II.
Contract research rept. 1 Oct 74-31 May 81,
Lloyd A. Morley. 31 Jan 82, 535p BUMINES-OFR-176(2)-82
Contract J0155009
See also Volume 1, PB83-120378.

This eight-chapter document is the second volume of a two-volume report that presents a comprehensive outline of coal mine electrical power systems from theory to practice. Together, the two volumes contain the vital aspects that go into planning and designing a mine power system. Building upon volume I, the subject of protective equipment and relaying starts volume II, first as an introduction in chapter 8, then by a treatment of device selection in chapter 9. Chapter 10 continues system protection in terms of transients and overvoltages. Chapter 11 describes the design of major power equipment, including power centers, switchhouses, and substations. Solid-state applications in mining are given in chapter 12, and batteries and battery charging are discussed in chapter 13. Chapter 14 covers electrical equipment in hazardous locations of mining operations. The report concludes with chapter 15, a discussion of electrical maintenance as well as some specific mine electrical problems. Information on surface and underground use is included in all chapters. An index finishes the documentation and is cross-referenced to both report volumes.

PB83-122598 PC **A11**/MF **A01**
Utah State Univ., Logan.
Probabilistic Modeling of Tailings Embankment Designs. Volume I: Model Development and Verification.
Open file rept. 24 Sep 79-31 Jan 82,
Loren R. Anderson, David S. Bowles, Ronald V. Canfield, and Kevan D. Sharp. Jan 82, 234p
BUMINES-OFR-161(1)-82
Contract J0295029
See also Volume 2, PB83-122606.

Traditionally, evaluation of the safety of slopes has been based on computing a safety factor against failure. In computing the safety factor, the geometry of the slop, the soil parameters, and the pore pressures were treated as deterministic quantities although they were known to be random variables. A pseudo-three-dimensional probabilistic slope stability model has been developed that treats shear strength as a random variable. The model uses the probability of a slope failure as an assessment of slope reliability. The model can accommodate zoned embankments of soil in which the strength is described by the Mohr-Coulomb strength envelope. Autocorrelation functions are used to describe the spatial correlation of the strength parameters, c and tan phi. Model error can also be included in the analysis. Examples are presented to illustrate the influence of the choice of the soil strength variability parameters on the probability of failure.

PB83-122606 PC **A03**/MF **A01**
Utah State Univ., Logan.
Probabilistic Modeling of Tailings Embankment Designs. Volume II: Model Application and Verification.
Open file rept. 24 Sep 79-31 Jan 81,
Joseph M. Green-Heffern, and Joseph A. Cesare.
Jan 82, 44p BUMINES-OFR-161(4)-82
Contract J0295029
See also Volume 1, PB83-122598. Prepared in cooperation with CH2M Hill Consulting Engineers.

A probabilistic slope stability computer model was developed as a design and analysis tool. Volume I of this report describes the model and volumes III and IV are users manuals for the computer programs. Volume II (this report) includes a description of a field investigation and stability analysis of an existing tailings dam. Based on the results, the tailings dam was evaluated for redesign using probabilistic considerations. Conclusions are made regarding the usefulness of the model as a design tool.

PB83-122648 PC **A02**/MF **A01**
Bureau of Mines, Pittsburgh, PA. Pittsburgh Research Center.
Methodology for Determining Occluded Gas Contents in Domal Rock Salt.
Rept. of investigations/1982,
David M. Hyman. Sep 82, 17p BUMINES-RI-8700
Library of Congress catalog card no. 82-600182.
Errata sheet inserted.

The Bureau of Mines has developed two experimental designs for determining the volumes and relative proportions of the various gas species, particularly methane (CH4), occluded in rock salt. To date, the rock salt samples analyzed have been relatively small (400- to 1,000-gram) grab samples from Louisiana Gulf Coast domal salt mines. The results obtained are comparable to results in Polish domal salt mines, in terms of occluded gas volumes per mass of rock salt. The notable difference between the Louisiana and Polish occluded gas mixtures is in the relative proportions of the individual gas species.

PB83-122762 PC **A05**/MF **A01**
Little (Arthur D.), Inc., Cambridge, MA.
Sealant Tests to Control Radon Emanation in a Uranium Mine.
Open file rept. Sep 79-Dec 81,
Donlad B. Lindsay, James E. Oberholtzer, and Clifford H. Summers. Dec 81, 91p BUMINES-OFR-172-82
Contract J0199041

This report describes a field-test program to determine the effectiveness of a polymeric wall sealant to reduce the escape of naturally occurring radioactive gas radon from the walls of an underground uranium mine into the ventilation air.

PB83-125351 PC **A04**/MF **A01**
Louisiana Geological Survey, Baton Rouge.
Physical Properties of Reservoir Fluids.
Final rept. 1 Feb 80-31 Aug 81,
D. G. Bebout, D. R. Gutierrez, and N. Y. Salem. Jan 82, 62p GRI-81/0042
Contract GRI-5014-321-0276

The primary objective of this GRI-funded project was to assess the total solution-methane resource in place in the geopressured zone along the Louisiana Gulf Coast. Other objectives included defining regional geothermal corridors, identifying potential geothermal test-well sites, and providing technical support for the U.S. Department of Energy geopressured-geothermal well-of-opportunity and designed-well programs. The data base assembled for this study consists of a grid of regional dip and strike electrical-log cross sections, porosity/permeability data from core analyses and reservoir tests, salinity calculations from logs, pressure determinations from shale-resistivity plots, and temperature from bottom-hole recordings on logs. Total bulk volume of sandstone reservoir in the geopressured zone was calculated from net-sandstone maps derived from the cross sections.

PB83-126045 PC **A09**/MF **A01**
Texas Univ. at Austin. Bureau of Economic Geology.
Exploration and Production Program for Locating and Producing Prospective Aquifers Containing Solution Gas and Free Gas--Texas Gulf Coast.
Annual rept. Feb 81-Feb 82,
A. R. Gregory, Z. S. Lin, R. S. Reed, and R. A. Morton. Aug 82, 180p GRI-80/0141
Contract GRI-5080-321-0398

The Port Arthur field, Jefferson County, Texas, was selected as a prospective watered-out gas field that is favorable for application of secondary enhanced gas recovery methods. This field contains multiple watered-out gas reservoirs, multiple thick aquifers, and gas stringer sandstones at depths from 10,850 to 11,700 ft. Sidewall core data show that the average porosity is 30 percent and average permeability is 60 md. Reservoir simulation studies predict that 3.91 x 10 to the 9th power standard cubic feet of unconventional gas can be recovered by natural flow from the 'C' sandstone over a 10-year period by reducing reservoir pressure from 6,500 to 4,018 psig. The break-even gas price is $3.45 per thousand standard cubic feet for a 15-percent rate of return. Substantial additional gas recovery can be obtained by co-production from other sandstones and by further reduction of reservoir pressure by artificial lift.

PB83-854349 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Enhanced Oil Recovery by Polymer Flooding. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 203p
Supersedes PB81-853475.

This bibliography contains citations concerning polymers and surfactants for enhanced waterflooding of depleted oil wells. Topic areas include polymer flooding, microemulsion flooding, synthetic polymers, biopolymers, surface active agents, rheology, economics, and environmental considerations. (This updated bibliography contains 198 citations, 90 of which are new entries to the previous edition.)

PB83-854810 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Beneficiation of Aluminum Ores. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 93p
Supersedes PB82-860925.

This bibliography contains citations concerning the extractive metallurgy of aluminum bearing ores. Methods for removal of impurities such as flocculation, flotation, digestion, and chemical reduction are discussed. The Bayer and Hall-Heroult processes are featured. Processes for drying and calcining are also included. (This updated bibliography contains 138 citations, 28 of which are new entries to the previous edition.)

PB83-855031 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Flotation Separation of Coal Concentrates. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 335p
Supersedes PB82-858820.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning flotation separation of mineral particles using the different surface chemical properties to cause the selected particles to float. Coal-washery flotation circuits are emphasized. Sorting and separating using compressed air jets into the mineral concentration, flotation reagent effects on coal concentrate quality, and economy of flotation separation of coal concentrates are included. Froth flotation, foam separation, and foam flotation processes are included with respect to oil and water mixtures, ore concentrates, and minerals, as well as coal concentrates. (This updated bibliography contains 329 citations, 116 of which are new entries to the previous edition.)

8J. Physical Oceanography

PB83-116749 PC **A09**/MF **A01**
National Oceanic and Atmospheric Administration, Boulder, CO. Office of Marine Pollution Assessment.
Office of Marine Pollution Assessment Technical Plan for Fiscal Year 1983.
Jul 82, 183p NOAA-82101102
See also report for fiscal year 1981, PB82-219049.

The purpose of this plan is to define Fiscal Year (FY) 1983 research activities of the Office of Marine Pollution Assessment (OMPA). Areas covered include the following: Marine waste disposal, Marine mining, Marine energy, Marine transportation, Accidental discharges, and Coastal land use.

8K. Seismology

PB83-119933 PC **A18**/MF **A01**
World Data Center A for Solid Earth Geophysics, Boulder, CO.
Directory of World Digital Seismic Stations,
Robert Ganse, and Charles R. Hutt. Aug 82, 408p SE-32

Digital recording seismographs have become one of the most important tools of modern research seismology. Digital recording has helped to increase both the dynamic range and the resolution of seismic measurements, as well as facilitating automatic routine measurements and computations. A proliferation of digital seismic stations has grown up in recent years, supported and operated by various agencies in countries around the world. These include networks and arrays as well as single stations. This publication is intended as a first attempt to catalog these digital stations, networks, and arrays into an organized format so that potential data users will at least know of their existence.

PB83-120238 PC **A21**/MF **A01**
World Data Center A for Solid Earth Geophysics, Boulder, CO.
Strong Motion Data from Japanese Earthquakes,
Ann Wildenstein Mori, and C. B. Crouse. Dec 81, 496p SE-29

This report contains plots of 177 components of uncorrected and corrected Japanese ground-motion accelerograms recorded between 1956 and 1978. Extensive information pertaining to the processing and characteristics of these records is also included.

8L. Snow, Ice, and Permafrost

PB83-854059 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Sea Ice. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 265p
Supersedes PB82-861394.

Citations in this bibliography cover observations and measurements of the properties, movement, and distribution or location of sea ice and sea ice meltwater. Age delineation and dynamic seasonal response of sea ice are considered as well as its paleoclimatic and recent climatic significance. Coverage is worldwide, with much attention focused upon polar regions. (This updated bibliography contains 237 citations, 64 of which are new entries to the previous edition.)

8M. Soil Mechanics

PB83-125187 PC **A04**/MF **A01**
Idaho Water and Energy Resources Research Inst., Moscow.
Frozen Soil Effects on the Erosion Hazard.
Technical completion rept.,
En Shen Yen, and Myron Molnau. Apr 82, 72p W83-00615, OWRT-A-070-IDA(1)

A study was conducted to ascertain whether erosion and sediment yield affected by frozen soil are usually worse than on unfrozen soil, and if erosion severity in early winter affected erosion severity in late winter or spring. Changes in surface roughness of three soil plots were determined as a function of freeze-thaw cycles. Runoff energy (RE) and sediment yield (SY) were classified relative to their occurrence on frozen, thawing, or unfrozen soil. Significant differences occurred in RE and SY from snowmelt or rainfall on frozen or unfrozen soil; SY from runoff on thawing/frozen soils was the same, and was significantly different from rain on unfrozen soil. Principal component and cluster analysis of RE, SY, and freeze index (FI) showed there is no statistical relation between RE, FI, or SY in the spring and winter, but that SY in winter is affected by RE, and that FI in winter with spring SY is determined by the spring RE.

9. ELECTRONICS AND ELECTRICAL ENGINEERING

9A. Components

DE82011152 PC **A03**/MF **A01**
Sandia National Labs., Livermore, CA.
Bond-Strength Studies for 1-MIL-Diameter Gold Wires Bonded to Hybrid Microcircuit Substrates.
Y. R. Kan, and V. C. Prantil. Dec 81, 39p SAND-81-8262
Contract AC04-76DP00789
Portions of document are illegible.

Detailed studies of the failure probability for gold wires bonded to multiplexer substrates under severe acceleration in the W79 artillery shell environments were made. The studies included: the calculated resultant pull forces exerted on the bond joints due to the W79 acceleration environments; the suitability of the loop-hook pull tests and the use of the normal Gaussian distribution theory for statistical description of bond strengths; and the probability of failure for gold wires bonded to multiplexer substrates under artillery shell accelerations using fixed angle pull tests and a Weibull distribution theory for the statistical description. Preliminary statistical analyses of the bond strength data obtained from the conventional loop-hook pull tests for a multiplexer substrate HMC, have shown that the ball bond is strong enough to withstand the 0.17 gram design limit load due to the W79 gun barrel environments with a very low probability of failure. For the wedge bond, however, the results of a statistical analysis for the bond strength agree with experience which shows that the wedge bonds are generally much weaker than ball bonds in multiplexer substrates, and the probability of failure may be high enough to cause a problem. The degradation of the wedge bond strength due to post-assembly testing is significant as indicated by the large increase in probability of failure for the post-assembly-tested wedge bonds. (ERA citation 07:044435)

DE82012068 PC **A07**/MF **A01**
Battelle Columbus Labs., OH.
Basic Study of the Aging Process in Solid Dielectric Cables. Part 1.
Feb 82, 132p DOE/ET/29239-1-V.1
Contract AC01-77ET29239

The Department of Energy has initiated a 4-year study concerned with the aging of extruded power transmission cables. The program has two principal objectives: develop a basic understanding of the physical mechanisms of dielectric aging and failures, and develop a nondestructive, accelerated test for predicting the service life of these cables. The program is devoted exclusively to the most widely used solid dielectrics, i.e., low density polyethylene, cross-linked polyethylene, and ethylene propylene rubber. For purposes of this program, it is assumed that the cable will be isolated from the external environment during service. The first two of four sequential tasks in the program have been completed. Task 1 was a comprehensive state-of-the-art review. One result of this review has been the completion of a large bibliography consisting of approximately 800 references on a variety of subjects; including dielectric breakdown phenomena; treeing (electrical and electrochemical); accelerated testing through application of higher-than-normal values of stresses such as frequency, voltage gradient, mechanical load, and temperature; multiple stress interaction; scaling; polyolefin morphology and degradation mechanisms; and statistical methods for experimental design and treatment of data. Task 2 involved the development of models of aging processes in solid dielectrics exposed to electrical, thermal, mechanical, and other stresses. Inputs to these models were obtained from selected literature sources. Three models, i.e., a crystallization kinetics model, heterogeneous kinetic model, and a homogeneous kinetic model are discussed. These models form the basis of the Task 3 experimental plan, which will have as its goal the verification and modification of these models. (ERA citation 07:050139)

ERATL-83/02 PC**$17.00**
ERA Technology Ltd., Leatherhead (England).
An Assessment of the Reliability of Edge Connectors,
D. Charman, R. G. Parr, and E. Moughton. Mar 82, 74p ERA-82-22

The report seeks to identify causes of unreliability in edge connectors as used with printed circuit boards. The information was obtained using postal questionnaires, personal visits, and a limited amount of practical work. Results obtained show that failures occur with sufficient frequency to be commercially embarrassing and that many are avoidable. National Standards and Specifications could be improved and long term solutions to the possible replacement of gold plating should be sought.

N82-33635/5 PC **A05**/MF **A01**
ITT Aerospace/Optical Div., Fort Wayne, IN.
Intagliated Phosphor Screen Image Tube Project.
Final Report.
R. J. Hertzel. 15 May 82, 89p NAS 1.26, 170445, NASA-CR-170445
Contract NAS5-26417

The production and evaluation of a magnetic focus image tube for astronomical photography that has an intagliated phosphor screen is described. The modulation transfer function of such a tube was measured by electronic means and by film tests, and the results compared with tubes of more conventional construction. The physical properties of the image tube and film combination, the analytical model of the optical interface, and the salient features of the intagliated screen tube are described. The results of electronic MTF tests of the intagliated image tube and of the densitometry of the tube and film test samples are presented. It is concluded that the intagliated screen is a help, but that the thickness of the photographic film is also important.

PAT-APPL-6-407 869 PC **A02**/MF **A01**
Department of the Army, Washington, DC.
Biasing Magnet Holder - Tuning Cap for Dielectric Waveguide Circulator.
Patent Application,
Richard A. Stern. Filed 13 Aug 82, 7p AD-D009 735/2
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

A Y-junction dielectric waveguide circulator is provided with a dielectric support plate. At the vertex of adjacent dielectric waveguides are positioned metal tuning legs. These tuning legs are spaced from the waveguides and extend higher than them. Preferably the tuning legs are made integral with a cap positioned above the circulator junction. This cap also serves as a holder for the upper biasing magnet. The lower magnet is centered under the junction and bonded to the bottom of the support plate. (Author)

PATENT-4 340 837 Not available NTIS
Department of the Air Force, Washington, DC.
Low Volume, Lightweight, High Voltage Electron Gun.
Patent,
Thomas W. Meyer. Filed 10 Jan 80, patented 20 Jul 82, 5p AD-D009 739/4, PAT-APPL-6-110 960
Supersedes PAT-APPL-6-110 960, AD-D006 962.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A low volume, lightweight, high voltage electron gun having an overall size and weight of approximately 50% the size and weight of a conventional electron gun of the same output. This is accomplished by interposing between the cathode and the walls of the housing of the electron gun a thin piece of dielectric material of preselected breakdown strength. The dielectric

material is in direct contact with both the cathode and the housing of the electron gun, with the voltage stress between the walls of the housing and the cathode being such that it does not exceed the breakdown strength of the dielectric material. (Author)

PATENT-4 340 900 Not available NTIS
Department of the Air Force, Washington, DC.
Mesa Epitaxial Diode with Oxide Passivated Junction and Plated Heat Sink.
Patent,
Herbert Goronkin. Filed 19 Jun 79, patented 20 Jul 82, 5p AD-D009 740/2, PAT-APPL-6-050 272
Supersedes PAT-APPL-6-050 272, AD-D006 305.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

An oxide passivated mesa epitaxial diode with an integral heat sink, and a process by which it may be fabricated. The passivation layer of highly pure thermally grown silicon dioxide is formed over the mesa walls in the region of the pn junction without causing a reaction between the contact metals and their surroundings during the high temperature environment imposed during thermal growth. The heat sink is deposited after the Si02 passivation has been grown, replacing a polycrystalline silicon layer beneath the mesa formation which was used as a temporary structural support. Dopant, to form the pn junction, is introduced into the silicon wafer after the formation of the passivation layer but before the heat sink is deposited. (Author)

PB83-107789 PC **A04**/MF **A01**
Allgemeine Elektricitaets-Gesellschaft AEG Telefunken, Heilbronn (Germany, F.R.). Geschaftsbereich Halbleiter.
MOS Field Effect Transistors for UHF Applications,
Wilfried Quast, and Winfried-Johann Rabe. Sep 82, 69p BMFT-FB-T-81-030
Trans. of mono. MOS-Field effect transistors fur den UHF-Bereich, n.p., 111p Feb 81. See also N82-14465.

Three different techniques for the fabrication of UHF MOSFET's were developed and their suitability as a production process was examined. The source and drain regions were realized by phosphorus ion implantation followed by selective oxidation, by diffusion from p and As doped oxides (PDO), and by a double lateral diffusion process. In order to characterize the fabricated MOSFET tetrodes, S parameters at high frequencies (800 MHZ) were measured. The best results were obtained with elements which were manufactured using the PDO technique. A one-dimensional small signal MOS model was derived which is able to describe the static characteristics of short channel MOS transistors.

PB83-116251 PC **A02**/MF **A01**
Technische Hogeschool, Delft (Netherlands). Onderafdeling der Wiskunde en Informatica.
An Asymptotic Theory for the Free Vibrations of an Iced Two-Conductor Bundled Transmission Line,
A. H. P. Van der Burgh. 1982, 23p 82-24

A theory is presented for the calculation of the free vibrations of an iced two-conductor bundled transmission line. As a model a system of two shallow elastic catenaries, connected by rigid massless spacers is considered. The effect of ice-coating is taken into account by assuming that the two catenaries have different mass per unit length. The theory includes a dynamic coupling between the vertical and torsional vibrations. This coupling may result in internal resonance of torsional and vertical modes of vibration; the excitation of the latter mode may be associated with the starting mechanism of galloping. In the conclusions some open problems are formulated concerning the asymptotic character of the approximations.

9B. Computers

DE82005237 MF **A01**
Brookhaven National Lab., Upton, NY.
Method of Interprocessor Communication for a Multiprocessor Environment.
J. L. Alberi. Nov 81, 4p BNL-30394, CONF-811012-43
Contract AC02-76CH00016
IEEE symposium on nuclear science, San Francisco, CA, USA, 21 Oct 1981, Portions of document are illegible. MN only.
Microfiche copies only.

An efficient method of interprocessor communication between a Digital Equipment Corporation LSI-11 minicomputer and an Intel 8085 microprocessor has been developed for a multiprocessor environment. In this method, which optimizes the handling of transactions between the two processors, an LSI-11 minicomputer interrupts the execution of the 8085 microcomputer under hardware control to place data directly in 8085 memory. Details of hardware implementation and interprocessor communication blocks are presented. (ERA citation 07:048891)

DE82005719 PC **A03**/MF **A01**
Sandia National Labs., Albuquerque, NM.
Development of an Active Data Dictionary/Directory for Use in a Common Data Input System.
P. J. Konnick. Nov 81, 39p SAND-81-1179
Contract AC04-76DP00789

This report defines and describes the evolution of a proposed active data dictionary/directory (DD/D) for use in a Common Data Input (CDI) System. How this dictionary/directory relates to other functional modules within the CDI System is examined. Acceptance criteria are discussed for implementing the DD/D in a computerized data-processing environment. The benefits of a proposed active DD/D are presented in a simulation of a payroll system. Finally, recommendations and a summary address the limitations of this development and provide directions for continuing research and development. (ERA citation 07:055973)

DE82008613 PC **A06**/MF **A01**
Lawrence Livermore National Lab., CA.
User's Manual for DYNA2D: An Explicit Two-Dimensional Hydrodynamic Finite-Element Code with Interactive Rezoning.
J. O. Haliquist. Feb 82, 113p UCID-18756-Rev.1
Contract W-7405-ENG-48
Portions of document are illegible.

This revised report provides an updated user's manual for DYNA2D, an explicit two-dimensional axisymmetric and plane strain finite element code for analyzing the large deformation dynamic and hydrodynamic response of inelastic solids. A contact-impact algorithm permits gaps and sliding along material interfaces. By a specialization of this algorithm, such interfaces can be rigidly tied to admit variable zoning without the need of transition regions. Spatial discretization is achieved by the use of 4-node solid elements, and the equations-of motion are integrated by the central difference method. An interactive rezoner eliminates the need to terminate the calculation when the mesh becomes too distorted. Rather, the mesh can be rezoned and the calculation continued. The command structure for the rezoner is described and illustrated by an example. (ERA citation 07:054510)

DE82009912 PC **A02**/MF **A01**
Sandia National Labs., Albuquerque, NM.
Sandia Micro Artwork Generation for Integrated Circuits (SMAGIC) System and the Hierarchical Artwork (HAT) Language.
B. D. Richard. 1982, 13p SAND-82-0022C, CONF-820908-2
Contract AC04-76DP00789
IEEE conference on circuits and computers, New York, NY, USA, 29 Sep 1982, Portions of document are illegible.

SMAGIC provides a capability for generating the artwork directives associated with large hierarchically-designed integrated circuits. The principal input to the SMAGIC system is the circuit description specified using the HAT language. The new language provides for specification of the usual geometric entities, for documentation internal to the artwork files and, even more significantly, for several PASCAL-like programming constructs. (ERA citation 07:055948)

DE82010165 PC **A09**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Comparative Performance Evaluation of Database Management Systems.
M. M. Keenan. Oct 81, 187p LBL-13700
Contract W-7405-ENG-48
Portions of document are illegible.

The primary goal of this performance evaluation study is to gather information which will allow comparison of the performance (and resource requirements) of various database management systems for different applications. The study is motivated by the difficulty of assessing the impact of the various combinations of features and implementation techniques present in different systems on their performances and resource requirements. In particular, there is some concern that the Data Retrieval System (DRS) of Advanced Data Management which has received a preliminary recommendation from LBL may not be able to handle numeric and statistical operations well, since it stores all data as text. It is not within the scope of this study to make any value judgements on the importance of performance relative to other selection criteria. It is also not within the scope of this project to examine in any great detail the impact of specific database system design decisions on performance. While the major emphasis of this project was on the functional performances of each system for a given application, and the identification of significant differences between system performances, recognition of the rapidly changing nature of data management technology motivated a significant secondary objective. This was to establish a high level framework which would allow additional database management systems and new versions of the previously tested systems to be added to the pool of results with a minimum of time and effort. This required a balance between specificity and generality in the overall test design. (ERA citation 07:048920)

DE82010412 PC **A02**/MF **A01**
Los Alamos National Lab., NM.
Bringing a Large Computer Network into FOCUS.
N. R. Morse, and J. L. Thompson. 1982, 12p LA-UR-82-83, CONF-820902-1
Contract W-7405-ENG-36
International conference on software engineering, Tokyo, Japan, 13 Sep 1982.

The development and implementation of the Facility for Operations Control and Utilization Statistics (FOCUS), a new centralized node in the Integrated Computing Network of the Los Alamos National Laboratory is described. FOCUS consists of production control, performance measurement, and network information subsystems. The software engineering practices on which the development was based are discussed, with emphasis on the application of those practices to network systems development. (ERA citation 07:055935)

DE82010980 PC **A02**/MF **A01**
Los Alamos National Lab., NM.
User's Manual for CURVES.
J. Abdallah, Jr. Oct 81, 23p LA-8844-M
Contract W-7405-ENG-36

CURVES is a two-dimensional, interactive Livermore Time-Sharing System utility program for graphicaly displaying data. This manual describes the plot file format and the use of CURVES. Commands to produce plots, set parameters, and enter text are accompanied by sample figures. Examples of commands and their visual products are given. (ERA citation 07:045434)

N82-34119/9 PC **A03**/MF **A01**
Fondazione Ugo Bordoni, Rome (Italy).
A Note on COPE: A Software Tool for Modeling and Evaluating the Performance of Computing Systems.
H. Beilner, and D. Grillo. May 82, 45p FUB-7-1982

The philosophy and the main capabilities of a computer performance evaluator (COPE) program are pointed out. The program operates on networks of queues that model both the architecture of the system to be evaluated and the mechanisms of resource allocation to competing demands which take place in that system. The modelling undergoes three main stages: network specification, workload specification and result specification. The model description is eased by a language specially conceived to the scope that also enables the user to edit changes in the system specifications and/or in the metrics production.

N82-34129/8 PC **A05**/MF **A01**
Martin Marietta Aerospace, Denver, CO. Denver Div.
Evaluation of Automated Decisionmaking Methodologies and Development of an Integrated Robotic System Simulation. Volume 1: Study Results.
Final Report.
J. W. Lowrie, A. J. Fermelia, D. C. Haley, K. D. Gremban, and J. Vanbaalen. Sep 82, 90p NAS 1.26:165975, MCR-82-581-V-1-1, NASA-CR-165975
Contract NAS1-16759

A variety of artificial intelligence techniques which could be used with regard to NASA space applications and robotics were evaluated. The techniques studied were decision tree manipulators, problem solvers, rule based systems, logic programming languages, representation language languages, and expert systems. The overall structure of a robotic simulation tool was defined and a framework for that tool developed. Nonlinear and linearized dynamics equations were formulated for n link manipulator configurations. A framework for the robotic simulation was established which uses validated manipulator component models connected according to a user defined configuration.

N82-34130/6 PC **A08**/MF **A01**
Martin Marietta Aerospace, Denver, CO. Denver Div.
Evaluation of Automated Decisionmaking Methodologies and Development of an Integrated Robotic System Simulation, Volume 2, Part 1. Appendix a: Software Documentation.
Final Report.
J. W. Lowrie, A. J. Fermelia, D. C. Haley, K. D. Gremban, and J. Vanbaalen. Sep 82, 166p NAS 1.26:165976, MCR-82-581-V-2-2-PT-1-APP-A, NASA-CR-165976
Contract NAS1-16759

Documentation of the preliminary software developed as a framework for a generalized integrated robotic system simulation is presented. The program structure is composed of three major functions controlled by a program executive. The three major functions are: system definition, analysis tools, and post processing. The system definition function handles user input of system parameters and definition of the manipulator configuration. The analysis tools function handles the computational requirements of the program. The post processing function allows for more detailed study of the results of analysis tool function executions. Also documented is the manipulator joint model software to be used as the basis of the manipulator simulation which will be part of the analysis tools capability.

N82-34131/4 PC **A06**/MF **A01**
Martin Marietta Aerospace, Denver, CO. Denver Div.
Evaluation of Automated Decisionmaking Methodologies and Development of an Integrated Robotic System Simulation. Volume 2, Part 2: Appendixes B, C, D and E.
Final Report.
J. W. Lowrie, A. J. Fermelia, D. C. Haley, K. D. Gremban, and J. Vanbaalen. Sep 82, 125p NAS 1.26:165977, MCR-82-581-V-2-2-PT-2-APP-B, NASA-CR-165977
Contract NAS1-16759

The derivation of the equations is presented, the rate control algorithm described, and simulation methodologies summarized. A set of dynamics equations that can be used recursively to calculate forces and torques acting at the joints of an n link manipulator given the manipulator joint rates are derived. The equations are valid for any n link manipulator system with any kind of joints connected in any sequence. The equations of motion for the class of manipulators consisting of n rigid links interconnected by rotary joints are derived. A technique is outlined for reducing the system of equations to eliminate contraint torques. The linearized dynamics equations for an n link manipulator system are derived. The general n link linearized equations are then applied to a two link configuration. The coordinated rate control algorithm used to compute individual joint rates when given end effector rates is described. A short discussion of simulation methodologies is presented.

PB83-109066 CP **T03**
Tennessee Valley Authority, Chattanooga. Nuclear Fuel Planning Branch.
NUMBER: Fortran Statement Renumbering System.
Software.
30 Jul 76, mag tape FSWEC-77/0203
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

Number is a Fortran program for renumbering the statement numbers of a Fortran program into a sequential order, using an increment of ten. An option is provided for visual verification of the results. Format statements are numbered with the other statements, not separately as in some programs. The system also contains two Basic Assembler Language subroutines, MOVE and PARMGO. This allows the system to convert FORTRAN language programs to the MORTRAN language. However, NUMBER is generally used independent of MORTRAN; the MORTRAN conversion is a selectable option of the NUMBER system. ...Software Description: The system is written in the FORTRAN and Basic Assembler programming languages for implementation on an IBM 370/165 or Amdahl 470/V6-II computer using the MVT or MVS/OS/VS operating system. The computer memory requirement is 100K.

PB83-109090 PC **A04**/MF **A01**
Panama Canal Commission, APO Miami 34011. Office of Financial Management.
COBOL Data Definitions System.
1 Jul 77, 54p FSWEC-77/0347A
For system on magnetic tape, see PB83-109108.

This is the documentation for the COBOL Data Definitions System. The system maintains a master file containing the specifications for the files, records and fields used in application systems programmed in COBOL. It also generates COBOL data definition statements for inclusion in a COBOL program to be compiled.

PB83-109108 CP **T08**
Panama Canal Co., Balboa Heights, Canal Zone. Office of Financial Vice President.
Coboi Data Definitions System.
Software.
1 Jul 77, mag tape FSWEC-77/0347
Price includes documentation. Source tape is in ASCII character set. Character set restricts preparation to 9 track one-half inch tape only. Identify recording mode by specifying density only. Call NTIS Computer Products, if you have questions.

The functions of this system are: (1) maintain a master file containing the specifications for the files, records and fields used in application systems programmed in Cobol; (2) generate Cobol data definition statements for inclusion in a Cobol program to be compiled. ...Software Description: The system is written in COBOL and NEAT/3 programming languages for implementation on an NCR CENTURY 200/300 computer using the B1 operating system. The computer memory requirement is 66K.

PB83-113696 PC **A09**/MF **A01**
Indian Inst. of Science, Bangalore. Dept. of Electrical Communication Engineering.
On the Optimization of Control Memory and Data Paths in the Design of Microprogrammed Computers and Microprocessors.
Doctoral thesis,
Ayakannu Mathialagan. Mar 80, 192p

This thesis deals with the bit optimization problem using the technique of bit steering applied to the mutually exclusive (in time) sets of microcommands obtained through the switching theoretic approach. The concurrency of microcommands in two mutually exclusive sets is expressed in the form of a matrix called concurrency matrix. The detection of microcommands that are bit steerable and their encoding is done with the help of the concurrency matrices. The technique enhances the extent of minimization of the control memory width over what is achieved in the switching theoretic method. The data path assignment problem is handled with the techniques of switching theory. The concept of bus compatibility for the data transformers is used to obtain the various ways of interconnecting the circuit modules with minimum number of buses that allow concurrent data transfers. These being the feasible solutions of the problem, the minimal interface solutions are obtained by assigning weights to the bus compatible sets present in the feasible solutions. This method is easier to implement and also takes less computation time than the heuristic or dynamic programming method.

PB83-115584 PC **A05**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
A Systems Programmer's Guide for Installing OMNITAB 80.
Technical note (Final),
Shirley G. Bremer, and Sally T. Peavy. Aug 82, 76p NBS-TN-1163
Supersedes COM-71-00068.

OMNITAB 80 is a general-purpose package which permits direct use of a computer without prior knowledge of computer languages. Every effort has been made to produce a system as computer independent as possible to make installation on any large computer configuration relatively easy. This Technical Note provides assistance to the systems programmer, with the task of installing OMNITAB 80, by pointing out where difficulties may occur and how to resolve them. The Note is intended more as reference material, since all modifications for a particular configuration are made prior to the distribution of the OMNITAB 80 system. OMNITAB 80 is a large system requiring a large computer. Overlay or segmentation is virtually essential. A method, that is employed at the National Bureau of Standards, for overlaying OMNITAB 80 is outlined. The method should be useful for other computer configurations.

PB83-118448 PC **A03**/MF **A01**
National Weather Service, Kansas City, MO. Central Region.
Programs SAVALL and STORALL.
Warren E. Sunkel. Jul 82, 40p NOAA-NWS-CRCP-4, NOAA-82092003

SAVALL and STORALL are functionally related background programs which perform tasks similar to the AFOS SAVE and STORE commands. The difference from the foreground commands is that these programs operate on an entire category of AFOS database products rather than on a single product. Program SAVALL moves all products of a given category from the AFOS database to a disk directory. Conversely, program STORALL moves all files of a given category from a disk directory to the AFOS database. Both programs are designed to operate in the background partition of the AFOS minicomputer at either a WSFO or a WSO. The programs are written in Data General's assembly language for Eclipse computers.

PB83-118828 PC **A03**/MF **A01**
National Weather Service, Kansas City, MO. Central Region.
A Subroutine to Find and Extract Data from an AFOS Database Product,
Robert L. Somrek. May 82, 27p NOAA-NWS-CRCP-3, NOAA-82092002

A subroutine consisting of routines FIND and XTRACT has been written to aid in searching for and extracting data from AFOS database products. The search routine, FIND, will locate the occurrence and position of a user-defined pattern in the AFOS product. The implementation of metacharacters to alter the normal search process makes the routine very flexible. The extraction routine, XTRACT, will retrieve a copy of the data as well as locate it in the AFOS product. The subroutine runs within the environment of the calling program. It is designed to be called from a program running in the background partition of the AFOS Eclipse S/230 minicomputer. The routines FIND and XTRACT are written in Data General's assembly language for the Eclipse. The routines have been combined into a single subroutine with two entry points.

PB83-854281 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Error Detection Codes. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 217p
Supersedes PB82-861790.

This bibliography contains citations concerning the design, development, and implementation of error de-

tection codes for use in computer software and hardware. A description of specific codes and a comparison of some codes, such as checksum versus residue codes for multiple error detection, are presented. Topics include a discussion of their effectiveness, estimates of reliability gain, models, and the state-of-the-art technology. Various applications of error detection codes for binary data, picture signals, package failures, and detection and diagnosis of software malfunctions are also included. (This updated bibliography contains 232 citations, 31 of which are new entries to the previous edition.)

PB83-854398 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Text Editing. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 126p
Supersedes PB82-862996.

This bibliography contains citations concerning principles, techniques, and technology for interactive text processing and editing. Considerable attention is given to specific systems and apparatus as well as to a wide variety of applications. (This updated bibliography contains 117 citations, 30 of which are new entries to the previous edition.)

PB83-854596 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Optical Memory Data Storage: Laser Applications. 1973-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1973-Nov 82.
Nov 82, 95p

This bibliography contains citations concerning laser applications for optical data storage. The types of lasers used, the design, and the cost, performance and storage capabilities are discussed. Dry and wet film processing are also considered. (Contains 96 citations fully indexed and including a title list.)

PB83-855148 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Transistor-Transistor Logic. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 162p
Supersedes PB82-855693.

This bibliography contains citations concerning the applications of transistor-transistor logic to various forms of logic networks. The fabrication, design, and speed of this family of logic circuits are discussed. The behavior and reliability of TTL circuits when subjected to electromagnetic interference is also included. (This updated bibliography contains 127 citations, 23 of which are new entries to the previous edition.)

9C. Electrical and Electronic Engineering

DE82011587 PC **A10**/MF **A01**
United Technologies Corp., South Windsor, CT. Power Systems Div.
Investigation of a Family of Power Conditioners Integrated into the Utility Grid. Final Report.
C. V. Banic, F. J. Kornbrust, R. F. Lukas, M. M. Mendes, and J. W. Walton. 1981, 217p DOE/ET/29355-1
Contract AC02-79ET29355
Portions of document are illegible.

The objective of this contract was to define advanced dc to ac power conditioner conceptual designs for the residential (5 to 15 kW) and intermediate (15 to 200 kW) markets which provide improved interface and economic characteristics for use with solar photovoltaic and other advanced dc sources. Conceptual designs of 10 kilowatt and 80 kilowatt self-commutated power conditioners using advanced transistor and control logic technology were prepared. These ratings provide the best power conditioner economic characteristics for the residential and intermediate market segments. The use of the self-commutated approach with advanced component and logic technology provides for growth in interface characteristics, cost and efficiency as penetration of dc source technologies increases. These improvements can be incorporated with minimal development effort. When compared to presently available equipment, characteristics of the 10-kW unit provide a 30 to 60% reduction in the power conditioner contribution to cost of solar photovoltaic electricity for a mature production situation. The 80-kW unit characteristics provide a 50 to 60% reduction in the same factor. The 10-kW and 80-kW designs are compared to presently available equipment and to the Department of Energy power conditioning goals. The Category 1 unit is near the DOE cost goals, meets full load efficiency goals and exceeds the part load efficiency goals. The Category 2 unit surpasses all DOE goals and is especially attractive with respect to part load efficiency which is quite important in extracting maximum energy from a photovoltaic array. (ERA citation 07:046638)

PAT-APPL-6-401 283 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center.
Energy Saving Electrical Motor Control System.
Patent Application,
T. M. Edge. Filed 23 Jul 82, 13p N82-30472/6, NASA-CASE-MFS-25560-1
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

An energy saving system in AC electrical motors which provides optimum control of the rriac control voltage supplied to different motors with which the system is used, despite the different characteristics of such motors is described. A three phase motor, including a triac control circuit for each phase is shown. Triggering of triac is controlled by the light output of LED received by photocell resistance. Zener diode controls charging of timing capacitor for the triac regardless of the motor back EMF. The physiccal arrangement of LED and individual photocells are shown. An alternative embodiment using constant current diodes to provide constant current charging of timing capacitor independently of motor back EMF is used.

PB83-104521 PC **A02**/MF **A01**
National Bureau of Standards, Washington, DC.
Measurement of Electromagnetic Radiation from Electric-Rail Cars,
John W. Adams. Aug 82, 23p NBSIR-82-1669
Sponsored in part by Transportation Systems Center, Cambridge, MA.

Existing Electromagnetic Compatibility (EMC) standards are not directly applicable for measuring Electromagnetic Interference (EMI) from an electric-rail vehicle. This report describes a measurement system and procedure that have potential for making the needed improvements. This system and procedure need further evaluation, use, and improvement before they could be considered for general use. The problems that were considered are discussed, and those that need additional work are given. Sample measured data from a Metropolitan Atlanta Rapid Transit Authority (MARTA) rail car are given. The measurements were performed at the Department of Transportation Test Center near Pueblo, Colorado.

PB83-854315 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Phase Locked Loop Theory, Design, and Performance. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 145p
Supersedes PB82-863135.

This bibliography contains citations concerning the theory, design, and performance characteristics of various phase locked loop circuits and devices. Considerable attention is given to loop stability analysis. Phase locked loop control systems, frequency synthesizers and estimators, phase detectors, and phase locked loop modulation and demodulation are also discussed. (This updated bibliography contains 134 citations, 14 of which are new entries to the previous edition.)

9D. Information Theory

PB83-800938 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Walsh Functions. 1964-October, 1982 (Citations from the NTIS Data Base).
Nov 82, 129p
Supersedes PB81-808495 and PB80-810385.

Multidisciplinary applications of Walsh functions in signal processing are considered. Emphasis is placed on the use of Walsh functions in information theory, pattern recognition, image processing, data processing, and data transmission. The necessary software and numerical analysis are included in the cited reports. (This updated bibliography contains 120 citations, 9 of which are new entries to the previous edition.)

9E. Subsystems

PAT-APPL-6-388 563 PC **A02**/MF **A01**
Department of the Navy, Washington, DC.
Dual Band, Low Sidelobe, High Efficiency Mirror Antenna.
Patent Application,
Dean D. Howard. Filed 15 Jun 82, 11p AD-D009 751/9
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

This document describes a dual band mirror antenna employing a continuous mirror without a hole. Side-by-side feeds for each band an electromagnetic lens, located behind a rotatable twist reflector (the mirror), collimate beams toward a pair of polarized reflectors located near the twist reflector and tilted to aim the reflected energy toward the twist reflector. One polarized reflector is reflective at the higher radiofrequency band and transport at the lower radiofrequency band. The other polarized reflector is reflective at both bands. Energy directed back toward the polarized reflectors from the tist reflector passes through the polarized reflectors to free space. (Author)

PAT-APPL-6-401 277 PC **A02**/MF **A01**
Department of the Navy, Washington, DC.
Ultra-Fast Field Emitter Array Vacuum Integrated Circuit Switching Device.
Patent Application,
Henry F. Gray, and Richard F. Greene. Filed 23 Jul 82, 12p AD-D009 746/9
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

A field-emitter switching device is described wherein a positive pulse is applied to a gate (which is held at a bias potential V sub 1 just below turn-on). A collector is held at a potential higher than the gate in order to collect emitted electrons from a field emitter source. As the voltage is applied to the gate, electrons are emitted immediately from the source and travel to the most positive potential at the collector. Because of the field emitter geometry, such electron transport is extremely fast. The ultra-fast switching speed is attained because the electrons reach near-maximum velocity within a few field tip diameters of the source. (Author)

PAT-APPL-6-405 475 PC **A02**/MF **A01**
Department of the Army, Washington, DC.
Compensation for Antenna Phase Shifter Failures.
Patent Application,
William Fishbein, and Otto E. Rittenbach. Filed 5 Aug 82, 17p AD-D009 743/6
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

Methods are described for optimizing the performance of phased array antennas wherein one or more elements thereof have become stuck at fixed at fixed phases. The methods involve readjusting the relative phases of all operative elements using a single stuck element as a phase reference, shutting off one or more stuck elements if this will improve performance, and readjusting the phases of the operative elements

in various ways depending on the fixed phases at which two or more antenna elements are stuck.

PATENT-4 328 502 Not available NTIS
Department of the Navy, Washington, DC.
Continuous Slot Antennas.
Patent,
Glenn A. Scharp. Filed 21 Jun 65, patented 4 May 82, 9p AD-D009 724/6, PAT-APPL-465 807
Supersedes PAT-APPL-465 807-65.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A resonant load is inserted in each end of a continuous curved slot of calculated design in the broad face of a waveguide for improving the electrical characteristics, reducing radiation pattern beamwidth, and extending the useful range of overall slot length. The permittivity and permeability of the load material are controlled to present a matched termination to the field in the slot thereby eliminating standing waves on the slot and improving aperture distribution. (Author)

PATENT-4 330 784 Not available NTIS
Department of the Navy, Washington, DC.
Variable Waveguide Continuous Slot Antenna.
Patent,
Gaylon E. Ryno, and John G. Hoffman. Filed 13 Feb 67, patented 18 May 82, 4p AD-D009 727/9, PAT-APPL-616 432
Supersedes PAT-APPL-616 432-67.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A continuous slot antenna having a rectangular waveguide whose broad dimension varies in proportion to the attenuation for providing improved radiation patterns. (Author)

PATENT-4 334 229 Not available NTIS
Department of the Navy, Washington, DC.
Leaky Waveguide Continuous Slot Antenna.
Patent,
Arthur P. Boblett. Filed 12 Nov 68, patented 8 Jun 82, 5p AD-D009 728/7, PAT-APPL-775 997
Supersedes PAT-APPL-775 997-68.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A continuous slot leaky waveguide antenna for radiation radio frequency so that the far E-field elevation pattern will closely follow a predicted pattern. (Author)

PB83-109751 PC **A03**/MF **A01**
National Inst. for Aeronautics and Systems Technology, Pretoria (South Africa).
Progress Report on GaAs FET Amplifiers in the Frequency Range 4 GHz to 8 GHz (2),
J. R. Nortier. Nov 78, 34p NIAST-78/79

This report covers the work done in the development and investigation into GaAs FET amplifiers with microstrip as medium and the theoretical design of lumped component amplifiers.

PB83-109819 PC **A07**/MF **A01**
Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung e.V., Freiburg im Breisgau (Germany, F.R.). Inst. fuer Angewandte Festkoerperphysik.
Electro-Optical Effects for the Application in Liquid Crystal Displays,
Guenter Baur, Gerhard Meier, Ekwal Sah, Bern Scheuble, and Axel Stieb. Oct 82, 129p BMFT-FB-T-81-170
Trans. of mono. Elektrooptische Effekte fuer die Anwendung in Fluessigkristall-Displays, n.p., 129p Oct 81. See also N82-19982.

In order to improve the optical characteristics of twisted nematic cells, the cell and material parameters necessary for optimal cell performance were evaluated and a novel variant of this cell type was characterized. For the development of liquid crystal mixtures with the respective properties the material investigations were carried out with a substantially increased accuracy. Further improvements of the fluorescence-activated display allowed the construction of a prototype ready for production. The structure of the defects occurring in cholesteric layers could be discovered in the case of homeotropic boundary alignment. Additionally the contrast limits and optical merit factors of reflective dichroic cells were calculated taking in account various optical interference factors.

PB83-113845 PC **A03**/MF **A01**
Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung e.V., Freiburg im Breisgau (Germany, F.R.). Inst. fuer Angewandte Festkoerperphysik.
Investigation of Electrochromic Effects for Display Application,
Gunter Baur, Lutz Pickelmann, Ortwin Schirmer, Peter Schlotter, and Volker Wittwer. 1982, 35p BMFT-FB-T-80-196
Trans. of unidentified German mono., Dec 80. See also N82-12366.

The physical and physicochemical properties of tungsten oxide layers which are important for display applications are elucidated: the electrochromic switching behavior, particularly the ion transport mechanism, and the stability and aging effects. A solution of these problems implies a systematic analysis of the structure of the thermally evaporated tungsten oxide layers used for electrochromic displays. By variation of the evaporation conditions and by studying the film structure it was possible to find out the structure of thermally evaporated layers as well as the principles of the ion transport mechanism. Based on these results, an improvement of stability and aging effects is now possible.

PB83-853929 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Hall Effect Devices. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 176p

This bibliography contains citations concerning the design, development, characteristics, and performance of a wide variety of Hall Effect devices and related circuits and components for various applications, including magnetic field strength measurement and aspect sensing. (Contains 193 citations fully indexed and including a title list.)

PB83-854638 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
High Density Packaging: Electronics. 1972-November, 1982 (Citations from the International Aerospace Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 147p
Supersedes PB82-861170.Prepared in cooperation with the National Aeronautics and Space Administration, Washington, DC.

This bibliography contains citations concerning the packaging of very large scale integrated circuits. Emphasis is placed on the reliability of the circuitry as well as built-in redundancy. Methods of on-line testing by means of accessible test points are also included. Packaging system applications include helicopter radar systems, tactical communications, air traffic control, and space exploration. Sensors and detectors for a wide variety of wavelengths based on packaged electronics are included. (This updated bibliography contains 142 citations, 15 of which are new entries to the previous edition.)

PB83-855189 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
High Density Packaging: Electronics. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 131p
Supersedes PB82-861188.

This bibliography contains citations concerning the packaging of very large scale integrated circuits. Emphasis is placed on the reliability of the circuitry as well as built-in redundancy. Methods of on-line testing by means of accessible test points are discussed. Automated systems for assembly and packaging for large scale integrated circuits are described. The impact of large scale circuits on future microprocessor evolution is presented. Application of these systems to lithography and projection printing are included. (This updated bibliography contains 147 citations, 32 of which are new entries to the previous edition.)

10.

ENERGY CONVERSION (NON-PROPULSIVE)

10A. Conversion Techniques

DE82008004 PC **A05**/MF **A01**
Galaxy, Inc., Washington, DC.
Update on Specified European R and D Efforts.
Oct 80, 79p DOE/SF/10538-T13
Contract AC03-79SF10538
Portions of document are illegible.

Information was collected for DOE on various European research programs of interest: Shell-Koppers coal gasification demonstration plant, fluidized-bed combustion pilot plant, a boiler super heat system, energy conservation on ships, waste heat utilization from large diesel engines and nuclear power plants and uranium enrichment plants, coal-water slurries with additive (CARBOGEL), electrostatic precipitators, radial inflow turbines, carbonization, heat pumps, heat exchangers, gas turbines, and research on heat resisting alloys and corrosion protection of these alloys. A number of organizations expressed a desire for creation of a formal interchange with DOE on specific subjects of mutual interest (one organization is unhappy about furnishing information to DOE). (ERA citation 07:048977)

DE82010040 PC **A05**/MF **A01**
Sandia National Labs., Livermore, CA.
Structural Analysis of Second-Generation Heliostats.
V. D. Dunder. Dec 81, 97p SAND-81-8023
Contract AC04-76DP00789
Portions of document are illegible.

As part of the overall evaluation of the four second-generation heliostats, a finite element analysis was performed to evaluate structure performance of the mirror modules subjected to gravity, operational wind loads and survival wind loads. All designs evaluated were found to be structurally adequate. (ERA citation 07:042919)

NUREG/CR-2692 PC **A05**/MF **A01**
Oak Ridge National Lab., TN.
An Integrated System for Forecasting Electric Energy and Load for States and Utility Service Areas,
Wen S. Chern, Colleen A. Gallagher, Richard C. Tepel, and John L. Trimble. Apr 81, 96p ORNL/TM-7947
Contract W-7405-eng-26

This report documents the integrated system for forecasting electric energy and load. In the system, the service area models of electrical energy and load. In the system, the service area models of electrical energy (kWh) and the load distribution (minimum and maximum loads and load duration curve) are linked to the state-level model of electrical energy (kWh). Thus, the service area forecasts are conditional upon the state-level forecasts. Such a linkage reduces considerably the data requirements for modeling service area electricity demand. Four utilities are selected to provide examples of the integrated forecasting system. The statistical results suggest that the use of selected, important demand determinants, such as price and income, to explain the differences in electricity demand growth between the service area and the remainder of the corresponding state is appropriate. The forecasting results show that the forecasted growth

rates of electricity demand, in some cases, differ substantially between the service area and the corresponding state.

N82-33825/2 PC **A19**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Necap 4.1: Nasa's Energy Cost Analysis Program Engineering Manual.
R. N. Jensen. May 82, 430p NAS 1.15:83240, NASA-TM-83240

The detailed procedure and algorithms used by the NASA Energy-Cost Analysis Program (NECAP) for determining and minimizing building energy consumption are provided.

N82-33826/0 PC **A08**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Necap 4.1: Nasa's Energy Cost Analysis Program Engineering Flow Chart.
R. N. Jensen. May 82, 166p NAS 1.15:83242, NASA-TM-83242

Flow charts for one NASA Energy-Cost Analysis Program (NECAP) to determine and to minimize building energy consumption are provided.

N82-33830/2 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
Theoretical and Experimental Power from Large Horizontal-Axis Wind Turbines.
L. A. Viterna, and D. C. Janetzke. Sep 82, 21p NAS 1.15:82944, E-1346, NASA-TM-82944
Contract DE-AI01-76ET-20320
Presented at the 5TH Biennial Conf. And Workshop on Wind Energy, Washington D.C., 5-7 Oct. 1981.

A method for calculating the output power from large horizontal-axis wind turbines is presented. Modifications to the airfoil characteristics and the momentum portion of classical blade element-momentum theory are given that improve correlation with measured data. Improvement is particularly evident at low tip-speed ratios where aerodynamic stall can occur as the blade experiences high angles of attack. Output power calculated using the modified theory is compared with measured data for several large wind turbines. These wind turbines range in size from the DOE/NASA 100 kW Mod-0 (38 m rotor diameter) to the 2000 kW Mod-1 (61 m rotor diameter). The calculated results are in good agreement with measured data from these machines.

PB83-109447 PC **A04**/MF **A01**
African Bibliographic Center, Washington, DC.
Energy Resources in Southern Africa: A Select Bibliography,
Ann Cavan. 1981, 74p ISBN-0-87859-021-8, AID-PN-AAJ-698
Contract AID/afr-C-1538

The aims, progress, and possibilities involved in Southern Africa's energy development are the subject of this 473-item bibliography. The primary items of information described in this document are relatively recent (1975-81), originate from both indigenous and international sources, and are mostly in English, although a few are in French and Portuguese. The presented information focuses on the African continent, the Southern African region, and the nations of Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Swaziland, South Africa, Tanzania, Zambia, and Zimbabwe. The energy source topics include alcohol, coal, gas, oil, solar, uranium, water, wind, and wood; as well as a general energy-development category.

PB83-112342 PC **A04**/MF **A01**
Virginia State Corporation Commission, Richmond.
Cost of Service Information System - Allocation Code: Electric (ACE).
Jul 81, 63p NTIS/DF-83/003D
Contract DE-FG01-79RG10243
For system on magnetic tape, see PB83-112417. Prepared in cooperation with Temple, Barker and Sloane, Inc., Lexington, MA.

The Cost of Service Information System of models (COSIS) is an integrated, electric utility strategic planning system. This system of five models, written in FORTRAN, provides a framework for the examination of a wide range of utility strategics or environmental conditions. The source code of the programs are contained on one IBM, labelled tape coded with the following options: 9 track, 800/1600 bits/inch, odd parity, 100 records/block, fixed length, ASCII. ACE (Allocation Code: Electric) model is the final step in the electric utility planning framework of COSIS. ACE performs cost allocations based on financial projections from the Regulatory Analysis model (RAm). Given a set of projected costs and allocation factors, ACE calculates projected class revenue requirements and average unit rates for future years. ACE relies on data aggregation and simplifying assumptions commensurate with RAm's level of accounting detail to approximate the effects of forecast conditions on revenue requirements by customer class.

PB83-112359 PC **A03**/MF **A01**
Virginia State Corporation Commission, Richmond.
Cost of Service Information System - PERTERB/LAMBDA/MARGIE Models.
Aug 81, 34p NTIS/DF-83/003G
Contract DE-FG01-79RG10243
For system on magnetic tape, see PB83-112417. Prepared in cooperation with Temple, Barker and Sloane, Inc., Lexington, MA.

The Cost of Service Information System of models (COSIS) is an integrated, electric utility strategic planning system. This system of five models, written in FORTRAN, provides a framework for the examination of a wide range of utility strategics or environmental conditions. The source code of the programs are contained on one IBM, labelled tape coded with the following options: 9 track, 800/1600 bits/inch, odd parity, 100 records/block, fixed length, ASCII. PERTERB/LAMBDA/MARGIE are three companion programs to the Production Cost Simulation (PCS) model. PCS was designed to estimate generation and total production cost of utility system. PERTERB and LAMBDA are used in calculating the expected marginal running cost of electric energy generation under various load conditions. The third program MARGIE, combines marginal production cost information and typical-day load data to plot hourly marginal costs for typical days and to average these over specified rating periods. The averaged marginal cost for different rating periods can be used in the design of marginal cost-based time-differentiated rates.

PB83-112367 PC **A11**/MF **A01**
Virginia State Corporation Commission, Richmond.
Cost of Service Information System - Production Cost Simulation (PCS) Model.
Oct 80, 231p NTIS/DF-83/003F
Contract DE-FG01-79RG10243
For system on magnetic tape, see PB83-112417. Prepared in cooperation with M. S. Gerber and Associates, Inc., Columbus, OH.

The Cost of Service Information System of models (COSIS) is an integrated, electric utility strategic planning system. This system of five models, written in FORTRAN, provides a framework for the examination of a wide range of utility strategics or environmental conditions. The source code of the programs are contained on one IBM, labelled tape coded with the following options: 9 track, 800/1600 bits/inch, odd parity, 100 records/block, fixed length, ASCII. PCS (Production Cost Simulation) model is the third step in the electric utility planning framework of COSIS. The PCS model projects energy production by generating unit as a function of the unit's equivalent availability, capacity, loading position, and the energy supply demands on the system. Dispatch performs an independent economic loading order for the generating units in PCS.

PB83-112375 PC **A06**/MF **A01**
Virginia State Corporation Commission, Richmond.
Cost of Service Information System -Load Analysis Model (LAm).
10 May 82, 109p NTIS/DF-83/003E
Contract DE-FG01-79RG10243
For system on magnetic tape, see PB83-112417. Prepared in cooperation with Temple, Barker and Sloane, Inc., Lexington, MA.

The Cost of Service Information System of models (COSIS) is an integrated, electric utility strategic planning system. This system of five models, written in FORTRAN, provides a framework for the examination of a wide range of utility strategics or environmental conditions. The source code of the programs are contained on one IBM, labelled tape coded with the following options: 9 track, 800/1600 bits/inch, odd parity, 100 records/block, fixed length, ASCII. LAm (Load Analysis Model) performs the first step in the analytic framework of COSIS. The purpose of LAm is to derive projected load duration curves for up to 30 years on a system level to serve as input to capacity expansion and production simulating models. It also has the capabilities to measure the projected impact of conservation policies such as load management or time-of-day rates on a customer class level. The classes are then summed to an adjusted system curve so that the latter reflects the impact of conservation. FRED calculates the monthly average profile at the system level from the historical or reference year.

PB83-112383 PC **A02**/MF **A01**
Virginia State Corporation Commission, Richmond.
Cost of Service Information System - CHOP/STAT Models.
Sep 81, 19p NTIS/DF-83/003C
Contract DE-FG01-79RG10243
For system on magnetic tape, see PB83-112417. Prepared in cooperation with Temple, Barker and Sloane, Inc., Lexington, MA.

The Cost of Service Information System of models (COSIS) is an integrated, electric utility strategic planning system. This system of five models, written in FORTRAN, provides a framework for the examination of a wide range of utility strategics or environmental conditions. The source code of the programs are contained on one IBM, labelled tape coded with the following options: 9 track, 800/1600 bits/inch, odd parity, 100 records/block, fixed length, ASCII. CHOP and STAT are used to process data for use by the Capacity Analysis Model (CAm). CHOP prepares and formats the yearly load duration data calculated by the Load Analysis Model (LAm). STAT aggregates cost and operating data of generating units to reduce the size of the capacity expansion problem solved by CAm.

PB83-112391 PC **A15**/MF **A01**
Virginia State Corporation Commission, Richmond.
Cost of Service Information System - Regulatory Analysis Model (RAm).
Apr 81, 349p NTIS/DF-83/003B
Contract DE-FG01-79RG10243
For system on magnetic tape, see PB83-112417. Prepared in cooperation with M. S. Gerber and Associates, Inc., Columbus, OH., and Temple, Barker and Sloane, Inc., Lexington, MA.

The Cost of Service Information System of models (COSIS) is an integrated, electric utility strategic planning system. This system of five models, written in FORTRAN, provides a framework for the examination of a wide range of utility strategics or environmental conditions. The source code of the programs are contained on one IBM, labelled tape coded with the following options: 9 track, 800/1600 bits/inch, odd parity, 100 records/block, fixed length, ASCII. RAm (Regulatory Analysis model) is the fourth step in the electric utility planning framework of COSIS. RAm is designed to preform up to 30 years of financial statements for an electric utility. The model is divided into six modules utilizing sets of specified data elements and parameters. Several policy scenarios or set of assumptions can be specified by the user to analyze the effects of different possible courses of action on a firm's future financial position and on its revenue requirements. MINIRAM calculates a revenue requirement multiplier for additional capacity to account for taxes and depreciation.

PB83-112409 PC **A06**/MF **A01**
Virginia State Corporation Commission, Richmond.
Cost of Service Information System - Capacity Analysis Model (CAm).
Oct 80, 121p NTIS/DF-83/003A
Contract DE-FG01-79RG10243
For system on magnetic tape, see PB83-112417. Prepared in cooperation with Temple, Barker and Sloane, Inc., Lexington, MA.

The Cost of Service Information System of models (COSIS) is an integrated, electric utility strategic planning system. This system of five models, written in FORTRAN, provides a framework for the examination of a wide range of utility strategics or environmental conditions. The source code of the programs are contained on one IBM, labelled tape coded with the following options: 9 track, 800/1600 bits/inch, odd parity, 100 records/block, fixed length, ASCII. The Capacity Analysis Model (CAm) assists the analyst in determining the appropriate size, timing, and mix of electric

generating unit additions and retirements given a set of candidate unit costs and operating characteristics, and a forecast of yearly load duration curves. CAm is suitable for developing a capacity expansion plan and investigating the impact on the plan of changes in the costs and operating characteristics of existing or candidate units or changes in load forecast.

PB83-112417 CP **T11**
Virginia State Corporation Commission, Richmond.
COSIS: Cost of Service Information System.
Model-Simulation.
10 May 82, mag tape NTIS/DF-83/003
Source tape is in ASCII character set. Character set restricts preparation to 9 track, one-half inch tape only. Identify recording mode by specifying density only. Call NTIS Computer Products if you have questions. Price includes documentation, PB83-112409, PB83-112391, PB83-112383, PB83-112375, PB83-112359, and PB83-112342.

The Cost of Service Information System of models (COSIS) is an integrated, electric utility strategic planning system. This system of five models, written in FORTRAN, provides a framework for the examination of a wide range of utility strategics or environmental conditions. The five models are: (1) LAm which derives projected load duration curves for up to 30 years on a system level to serve as input to capacity expansion and production simulating models. (2) PCS (Production Cost Simulation) which projects energy production by generating unit as a function of the unit's equivalent availability, capacity, loading position, and the energy supply demands on the system. (3) FRED which calculates the monthly average profile at the system level from the historical or reference year. (4) RAm (Regulatory Analysis Model) which performs up to 30 years of financial statements for an electric utility. (5) ACE which performs cost allocations based on financial projections from ths RAm model....Software Description: The models are written in Fortran for implementation on UNIVAC 1100/84 computers operating under OS.

PB83-112979 PC **A05**/MF **A01**
General Accounting Office, Washington, DC. Energy and Minerals Div.
Clear Federal Policy Guidelines Needed for Future Canadian Power Imports.
Report to the Congress.
20 Sep 82, 81p GAO/EMD-82-102, B-208231

The Department of Energy exercises control over imports of Canadian electricity by issuing permits for the construction of electrical transmission facilities at international borders. To date such permit applications have been appraised on a case-by-case basis. But anticipated increases in Canadian imports clearly signify the need for clear policy guidelines on the role of Canadian power to guide DOE's permit approval program and as part of its overall electricity planning efforts.

PB83-114215 PC **A07**/MF **A01**
Federal Trade Commission, Washington, DC. Bureau of Competition.
Residential Conservation Service - Report of the Federal Trade Commission. Volume I.
1982, 138p FTC/COMP-08-82
See also Volume 2, PB83-114223.

This publication, the first of two volumes provides a preliminary analysis of major competition and consumer protection issues associated with the Residential Conservation Service (RCS). The report contains a summary of the Commission's findings; discusses the background of the RCS program; describes the study's methodology and how a typical RCS program works; and identifies and analyzes the major competition and consumer protection issues associated with the RCS program.

PB83-114223 PC **A16**/MF **A01**
Federal Trade Commission, Washington, DC. Bureau of Competition.
Residential Conservation Service - Report of the Federal Trade Commission. Volume II: Appendices.
1982, 353p FTC/COMP-09-82
See also Volume 1, PB83-114215.

This publication, the second of two volumes, is an appendix to the Federal Trade Commission's Report on the 'Residential Conservation Service' (RCS). The appendix reproduces Section 225 of the National Energy Conservation Policy Act (NECPA), which requires the Commission to review the residential energy conservation activities of public utilities and home heating suppliers initiated pursuant to the RCS program, established by NECPA. The appendix also contains a report prepared for the Bureau of Consumer Protection entitled 'Survey of Firms Offering Energy Audit Services' and a Bureau of Competition working paper entitled 'Competition and Utility Cross-Subsidization of Energy-Conservation Activities'. Additionally, the appendix contains summaries describing twenty-three conservation programs and a list of the people interviewed for this report.

PB83-114397 PC **A09**/MF **A01**
Little (Arthur D.), Inc., Cambridge, MA.
Public Policy Incentives for Electric Utility Fuel Conservation Investments: A Case Study for Wind Power,
Frederic March, Edward H. Dlott, Donald H. Korn, Frederick R. Madio, and Robert C. McArthur. Sep 81, 182p NSF/PRA-81009
Grant NSF-PRA80-00488

A systematic method is presented for evaluating the future of solar electric technology in the electric utility industry. The sensitivity of economic performance to a range of policy variables is determined for a selected solar electric technology (wind) at typical utilities. Finally, the prospects for the solar electric technology in utilities as a function of federal power is appraised for a test case based on wind. The report includes a review of wind energy technology and applications, methodology; perspectives on the electric utility industry; construction of the utility case study; and financial and policy analyses. In regard to utility investment in wind power systems, it was demonstrated that (1) large wind energy projects in the multi-megawatt range will be economic for many utilities in the 1980s if wind industry production cost targets are met; (2) the climate for investment in general and for 'risky' projects, such as wind energy, is poor; (3) utilities are risk averse with respect to renewable energy investments; and (4) wind projects must justify themselves on the basis of fuel savings only. Major findings in regard to investment evaluation criteria used by utilities also are presented.

PB83-115543 PC **A04**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
Strategies for Energy Conservation for a Large Retail Store,
James Y. Kao, Walter H. Parken, and Thomas E. Pierce. Sep 82, 54p NBSIR-82-2580
Sponsored in part by Department of Energy, Washington, DC.

A comparative analysis is made of the thermal performance of selected HVAC systems and control strategies commonly employed in large retail stores. The comparisons are made for six geographical locations representing wide climatic variations within the continental United States. Hour-by-hour simulations with the BLAST computer program were used to obtain the yearly heating, cooling and fan energy consumption of a two-story large retail store. The HVAC systems simulated were constant volume reheat, variable air volume, and with direct expansion coils. The control strategies tested were dry bulb temperature economy cycle, enthalpy economy cycle, supply air temperature resetting, lowered space heating temperature, VAV zoning variations, and the combinations of these strategies. The results of these simulations were given and discussed. Substantial energy consumption differences were shown.

PB83-117283 PC **E05**/MF **E05**
International Inst. for Applied Systems Analysis, Laxenburg (Austria).
Evolution of Future Energy Demands Till 2030 in Different World Regions: An Assessment Made for the Two IIASA Scenarios,
Arshad M. Khan, and Alois Hoelzl. c1982, 143p RR-82-14

An assessment is made of the evolution of energy demand in different world regions over the next five decades using an energy demand model called MEDEE-2. The 1975 pattern of energy consumption in each region is analyzed in terms of useful and final energy requirements of a large number of activities in three broad sectors of the economy: industry, transportation, households/services. Projections of useful and final energy demand to the years 2000 and 2030 are obtained by considering a plausible evolution of these activities together with feasible improvements in technological factors and likely changes in lifestyles. The detailed scenario assumptions underlying these projections are spelled out and the rationale behind these assumptions is explained. The extent of energy conservation embodied in these projections is elaborated and the shares of various energy forms in the projected sectoral energy demand trajectories are discussed.

PB83-123216 PC **A02**/MF **A01**
Hittman Associates, Inc., Columbia, MD.
Applicability of the Residential Energy Consumption Analyses to Various Geographic Areas.
Nov 73, 19p HUD/HAI-6, HUD-0002321, HUD/PDR-29/12
Contract HUD-H-1654

This paper discusses the applicability of a HUD - sponsored study of methods of modifying residential energy consumption, conducted in the Baltimore / Washington Area, to other geographic areas of the country. The following geographically related factors are considered: climatology (dry and wet bulb temperatures, wind velocity, and direction, etc.); solar angle and solar flux; structural design; construction materials; availability and costs of gas, oil, and electricity; and regional trends or bias. The previous study of single - family and multifamily residences required the use of thermal modeling and computerized computation. The computation programs allowed for five categories of input data: external loads (weather and solar), structure (design and materials), internal loads (lights, appliance, and occupants), comfort control systems (heating, cooling, and ventilation equipment), and occupant lifestyle. To assess the applicability of this study to any geographic area, the geographical characteristics, the various energy - conservative modifications were evaluated qualitatively. The geographical characteristics that influence residential energy consumption are listed along with examples of typical locations. A table illustrates the results of this assessment. Having determined the applicability of a modification, a quantitative determination of the effectiveness of the modification can then be made by using specific data for the geographic area as inputs to the computer computation program. The application of the computer program used in the calculation of hourly heating and / or cooling loads requires varying the inputs to the program suitable to the geographical region involved. A flow chart, six references, and tables are provided.

PB83-123539 PC **A08**/MF **A01**
Utah Univ., Salt Lake City. Inst. of Human Resources Management.
Geothermal Energy Employment and Requirements 1977-1990,
Richard L. Hannah. Dec 81, 168p HUD-0002360, DOE/IR-70004/1
Contract DE-AT03-77IR70004

This paper estimates the manpower involved in geothermal activities, determines if skill shortages are likely to present a problem, forecasts future employment in the geothermal industry, conducts a technology assessment, and suggests ways to assist in meeting manpower requirements. A total of 40,082 person months of employment were estimated on the basis of mail surveys and personal interviews during 1977. About 3,340 persons were estimated to work full time during the survey period. Geothermal activity is highly concentrated; the 20 largest employers surveyed accounted for 52 percent of the reported employment. Employers reported difficulties in recruiting geologists, geophysicists, reservoir engineers, environmental engineers, and drill rig personnel. The Delphi technique, used to assess technological developments of significance for manpower demand, indicates that technology must advance in several areas in order to expand resource use, but slow, steady advance is more to be expected than any dramatic breakthrough. Thus, an unanticipated surge in manpower demand is unlikely to result from rapid application of new technology. Firms active in geothermal activities should aide colleges in expanding the number of geothermal courses offered. Additional studies of this industry are needed to better determine manpower needs. Tables and footnotes are included, and appendices present 86 references, a discussion and definitions of the employment matrix, occupation profiles, and a manpower forecast. (Author abstract modified).

PB83-124560 PC **A02**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
Outdoor Exposure Tests of Solar Absorptive Coatings.
Larry W. Masters, James F. Seiler, and Willard E. Roberts. Oct 82, 24p NBSIR-82-2583
See also PB81-188278. Sponsored in part by Department of Energy, Washington, DC.

This report is a follow up to an earlier report (NBSIR 81-2232, January 1981) in which data on the performance of selected absorptive coatings in both accelerated laboratory exposures and outdoor exposures at three sites were presented. The research presented in this report focuses upon the results obtained by continuing the outdoor exposures of absorptive coatings using ASTM E781-81, Standard Practice for Evaluating Absorptive Solar Receiver Materials When Exposed to Conditions Simulating Stagnation in Solar Collectors with Cover Plates. Comparison of the results of the outdoor exposures with those obtained in accelerated laboratory exposures indicated that (1) the accelerated exposures, as described in ASTM E744-80, Standard Practice for Evaluating Solar Absorptive Materials for Thermal Applications, provide more severe exposure conditions than outdoor exposures, and (2) the degradation processes induced by outdoor exposure are adequately addressed by the accelerated laboratory exposures.

PB83-127993 PC **A04**/MF **A01**
Agricultural Research Service, Washington, DC.
Energy Research for the Farm: An Overview.
Agriculture information bulletin,
Robert E. Enlow. Feb 82, 68p USDA-ARS-82/1, AIB-447

The Agriculture Information Bulletin (AIB) provides a general overview of agricultural research activities in the area of energy as it relates to farming and ranching. It is an awareness document that tells generally what is being done and what has been accomplished largely during the 1970's in significant areas of agricultural research funded wholly or partially by the U.S. Department of Agriculture (USDA) and State governments, unless otherwise stated. It is written for agricultural leaders, practitioners, farmers, and ranchers--all who advise about farming or who actually till the soil. The AIB is not intended as a how-to publication, nor is its purpose to include all examples of ARS research. Every effort was made, however, to discuss briefly those State and Federal research projects that represent research on energy and fuel for the farm. For those who wish to follow up in more depth, the AIB includes a reference section keyed to the text.

10B. Power Sources

DE82002655 PC **A05**/MF **A01**
Semix, Inc., Gaithersburg, MD.
Semicrystalline Casting Process Development and Verification. Phase 1 Final/Quarterly Progress Report No. 4, March 19, 1981-June 19, 1981.
1981, 81p DOE/ET/23197-T4
Contract FC01-80ET23197

Crystallization of 17 kg bricks with significantly lowered labor, energy and direct material inputs per kilogram of silicon than those to produce 4.2 kg bricks has been accomplished. Progress has been made toward full automation of the crystallization process through controller and computer hook-up to prototype ubiquitons crystallization process (UCP) equipment. Experimental evidence shows that prototype UCP systems can increase throughput without sacrificing the quality of the material. Ability of semicrystalline sheet to be processed into solar cells with average conversion efficiencies of 14.2% has been proven. Significant progress has been made in wafering toward increased yield and higher throughput through slicing large area wafers (12 cm x 16 cm have been demonstrated), slicing thinner wafers and reducing cutting times. (ERA citation 07:049586)

DE82004145 PC **A05**/MF **A01**
Curtiss-Wright Corp., Wood-Ridge, NJ. Power Systems Div.
High Temperature Turbine Technology Program. Phase II. Technology Test and Support Studies. Technical Progress Report, April 1, 1981-June 30, 1981.
Jul 81, 95p CW-WR-76-020.85-A, FE-2291-85A
Contract AC01-76ET10348
Portions of document are illegible.

This report presents the status of work performed on the High Temperature Turbine Technology Program, Phase II Technology Test and Support Studies during the second quarter of 1981, April 1 through June 30, 1981. All components of the Turbine Spool Technology Rig (TSTR) have been fabricated or reworked as necessary for assembly and test at 2600 exp 0 F turbine inlet temperature to evaluate the effect of hot gas stream particulates on the transpiration air-cooled turbine. Testing of the 60 exp 0 sector combustor rig was completed in preparation for the TSTR test program. This preparatory testing included development of the particulate injection system and evaluation of other combustor modifications prior to incorporation of these changes into the TSTR combustor. The development status of both the low Btu gas fuel cooled combustor and high temperature, low emissions coal-derived liquid-fueled combustor are reviewed. Both of these programs are in the design and component fabrication phase leading to test evaluation during the fourth quarter. Control systems status and descriptions for the above items are given. The analytical studies to support the TSTR and combustor programs are described. Extended time oxidation testing of Nichrome V-Cb material porous mesh for transpiration air cooled turbine airfoils is continuing; test results to date confirm predictions that the effect of oxidation on cooling air flow capacity diminishes exponentially as exposure time increases. (ERA citation 07:043225)

DE82006312 PC **A03**/MF **A01**
Battelle Pacific Northwest Labs., Richland, WA.
Development, Characterization and Evaluation of Materials for Open-Cycle MHD. Quarterly Report for the Period Ending December 1980.
J. L. Bates, and D. D. Marchant. Jan 82, 44p PNL-2004-13
Contract AC06-76RL01830
Microfiche only after original copies are exhausted.

The development and fabrication is continuing on a graded composite electrode with a refractory HfO sub 2 -Re/sub x/O/sub y/ surface and a HfO sub 2 -RE/sub x/O/sub y/-In sub 2 O sub 3 current leadout for testing. The electrical conductivity of some oxide current leadouts were measured, and some general conclusions made regarding effects of composition. Also measured was the electrical conductivity of some yttrium chromites doped with Mg and Ca. The characterization and evaluation of Pt-coated Cu anodes tested in AVCO's Mark VI generator using K sub 2 SO sub 4 as seed was completed. Potential mechanisms for enhanced corrosion of Cu and Pt in sulfate seed are discussed. The characterization of slag removed from MSU No. 1 heat exchanger core was completed. Possible reasons for enhanced slag blocking of RFG core are considered. (ERA citation 07:047139)

DE82007510 MF **A01**
Calspan Advanced Technology Center, Buffalo, NY.
Mitigation of Biofouling Using Coatings. Year 1 Annual Report.
A. E. Meyer, R. E. Baier, and R. W. King. 31 Aug 81, 114p DOE/ER/10766-4
Contract AC02-80ER10766
Best available copy from document source. Available in microfiche only.

This project is directed toward the evaluation of benefits associated with toxicant-free control of the surface energetic properties of materials used in heat exchangers; and to identify preferred ranges of the surface conditions that minimize deposits of biological fouling known to deteriorate heat exchange efficiencies in seawater, brackish water, and freshwater systems. The technical approach employs special diagnostic plates in novel flow cells where fluid flow conditions can be well-controlled, modifying the surface chemistry and surface energy of the plates with very thin coatings and examining the earliest events of biofouling caused by macromolecules and microbial organisms. All of the evidence gathered in Year 1 of the project pointed to the universal acquisition of adsorbed natural organic films, attached bacteria, and adherent bacterial exudates by a broad range of material types. However, primary films of adsorbed material on controlled intermediate-energy surfaces tended to slough off more readily than from other surface types. Heat transfer deterioration was not observed during fouling periods up to 12 days of exposure, since the acquired fouling film thicknesses averaged only 500 angstroms - well within the laminar boundary layer - between 6 and 12 days of exposure under the experimental conditions. Year 2 of the project includes plans for confirming field studies at a power plant that uses river water as its cooling water source. (ERA citation 07:043229)

DE82007532 MF **A01**
Acres American, Inc., Columbia, MD.
CAES/UPH Hybrid Study. Phase I. Final Report.
S. Bahadur, C. Driggs, and M. Daye. Jun 81, 50p DOE/RA/50439-1-Ph.1
Contract AC02-80RA50439
Best available copy from document source. Available in microfiche only.

The objective of the present study was to investigate the possibilities of utilizing the underground Pilot Knob mine in Missouri with different CAES systems and evaluate their technical and economic feasibility. This evaluation consisted of the following: a geological and hydrological assessment of the mine and determination of its capacity for compressed air energy storage; an evaluation of the mine with regard to its configuration and the required volume and structural modifications to suit the different CAES concepts from a civil engineering viewpoint; identification of alternate CAES cycles that are applicable for utilizing the mine and estimation of performance and cost parameters; and consideration of the necessary surface structures and site layout required for the different CAES concepts including an overall cost estimate and schedule. The geological and hydrological evaluation indicated that the mine is suitable for compessed air storage. In order to bring the mine to a condition suitable for utilization, only minor modifications would be required. Other modifications required are sealing of the mine and installation of air pipe and access provisions, most of which are common to any other underground storage space. Examination of the applicability of several low pressure CAES cycle variations to the specific case of the existing Pilot Knob iron ore mine showed that a 130 MW modified adiabatic design incorporating some compressor intercooling might be appropriate for the Pilot Knob site. The pressurized fluidized bed approach also appears practical on a technical basis with the mine capable of supporting at least 10 h of storage capacity with a single 125 MW unit based on a cycle derived from the Curtiss-Wright CAES design. A conventional fuel-fired cycle based on the BBC design also seems to be potentially applicable, providing 10 h of storage and 170 MW of capacity. (ERA citation 07:043737)

DE82008003 PC **A02**/MF **A01**
Radian Corp., Austin, TX.
Raft River Condenser-Tube Examination.
D. F. Suciu. 3 Apr 81, 14p DOE/SF/11503-T1
Contract AC03-81SF11503
Portions of document are illegible.

In the program of development of a water treatment for the 5 MW Raft River power plants' carbon steel heat rejection system, four carbon steel tubes were analyzed in this batch. The results of visual and scanning electron microscope examination of the tubes are presented. (ERA citation 07:049975)

DE82008091 PC **A07**/MF **A01**
Argonne National Lab., IL.
Effects of Brush Cleaning Upon Microfouling in an OTEC Simulation System. Final Report.
D. C. White. Aug 81, 129p ANL/OTEC-BCM-025
Contract W-31-109-ENG-38
Portions of document are illegible.

Biochemical methods to assess the biomass, physiological status and community structure of the microfouling community on titanium and aluminum pipes in OTEC condenser simulators have been developed using the analysis of: (1) the total organic carbon; (2) extractable lipids; and (3) adenosine nucleotides. These assays have been correlated with microfouling morphology by scanning electron microscopy and heat transfer efficiency measures as R/sub f/. The methods were applied to a series of aluminum and titanium pipes that cycled over three periods of fouling and manual cleaning, or were brushed with M.A.N. flow-driven brushes at the Panama City, Florida, Naval Coastal Systems Center Laboratory. Population differ-

ences were detected in the free fouling microbial communities between cleaning cycles, on the same or different metal surfaces, and between the residual film left on the surface with manual or M.A.N. brushing. Findings with relevance to OTEC design considerations included: (1) induction of extracellular polymer plaque on aluminum surfaces by M.A.N. brushing; (2) a residual population after cleaning that stimulates the rate of free fouling; (3) morphologic and biochemical evidence for filamentous microorganisms penetrating in and under the aluminum corrosion gel (which apparently makes it very difficult to clean); and (4) a remarkable resilience of the microfouling community to anoxic stress. (ERA citation 07:049787)

DE82008207 PC **A08**/MF **A01**
Sandia National Labs., Albuquerque, NM.
Design of a Photovoltaic System for a Temperate Climate All-Electric Residence.
E. M. Mehalick, G. F. Tully, J. Johnson, N. Truncellito, and R. Schaeffer. Jan 82, 164p SAND-80-7173
Contract AC04-76DP00789
Portions of this report are illegible.

A photovoltaic system has been developed and integrated into a single-story residence having low space conditioning loads typical of a temperate climate similar to Santa Maria, CA. The design addresses the residential market segment of low energy consuming houses with limited roof area availability; in fact the garage roof is used for the array. The array size to meet the requirements of this type of house covers 40 m exp 2 with a rated power output of 4.3 kW at NOCT conditions. A flexible array installation is presented which can be implemented as an integral mount or a stand-off mount depending on the homeowner preference. A 4 kW utility-tied inverter is used in the power conversion subsystem, representative of currently available hardware. The system provides feedback of excess energy to the utility which is the most promising approach for grid-connected residential systems in the mid 1980's. The complete system and house design are described, including all the pertinent installation and construction drawings. Specific performance results are presented for the Santa Maria area. The system, coupled with previously completed designs, provide a set of design options expected to be available to residential home owners in the mid 1980's. (ERA citation 07:053360)

DE82008440 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
NASA-Redox Cell-Stack Shunt Current, Pumping Power, and Cell-Performance Tradeoffs.
N. Hagedorn, M. A. Hoberecht, and L. H. Thaller. Feb 82, 30p DOE/NASA/12726-11, NASA-TM-82666
Contract AI04-80AL12726
Portions of document are illegible.

The NASA Redox energy storage system has been under active technology development since the mid 1970's. The hardware currently undergoing laboratory testing is either 310 cm exp 2 or 929 cm e (0.33 ft exp 2 or 1.0 ft exp 2) per cell active area with up to 40 individual cells connected to make up a modular cell stack. This size of hardware allows rather accurate projections to be made of the shunt power/pump power trade-offs. The modeling studies that have been completed on the system concept are reviewed along with the more recent approach of mapping the performance of Redox cells over a wide range of flow rates and depths-of-discharge of the Redox solutions. Methods are outlined for estimating the pumping and shunt current losses for any type of cell and stack combination. These methods are applicable to a variety of pumping options that are present with Redox systems. The results show that a fully developed Redox system will have acceptable parasitic losses when using a fixed flow rate adequate to meet the worst conditions of current density and depth of discharge. These losses can be reduced by about 65% if variable flow schedules are used. The exact value of the overall parasitics will depend on the specific system requirements of current density, voltage limits, charge, discharge time, etc. (ERA citation 07:050701)

DE82008626 MF **A01**
Black and Veatch, Kansas City, MO.
Solar Cogeneration: Cimarron River Station, Central Telephone and Utilities-Western Power.
J. E. Harder. 1 Apr 81, 208p DOE/SF/11439-T1
Contract AC03-81SF11439
Portions of document are illegible.
Best available copy from document source. Available in microfiche only.

The site-specific conceptual design progress is described for a solar central receiver cogeneration facility at a Kansas utility. The process is described which led to the selection of the preferred solar cogeneration facility. The status of the conceptual design is presented. The evaluation of system performance is described. A test program is described that is to determine the magnitude of impact that local environmental factors have on collector system performance and to measure the direct normal insolation at the cogeneration facility site. The system specification is appended. (ERA citation 07:042911)

DE82008658 PC **A03**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
Progress Report No. 39 for a Program of Thermoelectric-Generator Testing and RTG Degradation-Mechanisms Evaluation.
A. Lockwood, and V. Shields. Jan 81, 40p DOE/ET/33062-T6
Contract AI03-79ET33062
Portions of document are illegible.

Two neodymium selenide n-type legs and two new p-type Cu-Se legs have been set up for testing. Weight loss measurements for coated Si-Ge material produced by G.E. are reported. The coating on the n-type Si-Ge legs and the n-type side of the Si-Mo hot shoes has disappeared. The coating on the p-type side of the Si-Mo hot shoes has almost completely degraded. It is unlikely that the G.E. coatings have ever been effective. Thermal conductivity measurements are in agreement. The remaining MHW generator on test, Q1-A, has accumulated 28,600 hours and performance remains stable. The performance of the 18 couple modules remains stable. The S/N-1 module has accumulated 30,000 hours and the S/N-3 module has reached 27,300 hours. Telemetry data indicate no changes in the trends of degradation of LES 8 and 9 and the Voyager RTGs. (ERA citation 07:047142)

DE82009405 PC **A05**/MF **A01**
Arnold Engineering Development Center, Arnold AFS, TN.
MHD Performance Demonstration Experiment, October 1, 1080-September 30, 1981.
G. L. Whitehead, L. S. Christenson, E. J. Felderman, R. L. Lowry, and E. J. Bordenet. Dec 81, 89p DOE/ET/11417-14
Contract AI01-78ET11417
Portions of document are illegible.

The Arnold Engineering Development Center (AEDC) has been under contract with the Department of Energy (DOE) since December 1973 to conduct a magnetohydrodynamic (MHD) High Performance Demonstration Experiment (HPDE). The objective of this experimental research is to demonstrate the attainment of MHD performance on a sufficiently large scale to verify that projected commercial MHD objectives are possible. This report describes the testing of the system under power-producing conditions during the period from October 1, 1980 to September 30, 1981. Experimental results have been obtained with the channel configured in the Faraday mode. Test conditions were selected to produce low supersonic velocity along the entire channel length. Tests have been conducted at magnetic fields up to 4.1 Tesla (T) (70% of design). Up to 30.5 MW of power has been produced to date (60% of design) for an enthalpy extraction of approximately 11%. The high Hall voltage transient, observed during the previous series of tests has been reduced. The reduction is mostly probably due to the fuel and seed being introduced simultaneously. The replacement of the ATJ graphite caps on the electrode walls with pyrolytic graphite caps has resulted in significantly higher surface temperature. As a result, the voltage drop is some 60% of the cold wall voltage drop during the previous series of tests. However, the absolute value of the present voltage drop is still greater than the original design predictions. Test results indicate, however, that the overall enthalpy extraction objective can be achieved. (ERA citation 07:054191)

DE82011150 PC **A15**/MF **A01**
Sandia National Labs., Albuquerque, NM.
Photovoltaic Systems and Applications.
Jan 82, 342p SAND-82-0309, CONF-820218-Absts
Contract AC04-76DP00789
Project integration meeting, Albuquerque, NM, USA, 9 Feb 1982, Portions of document are illegible. MN only. Microfiche only after original copies are exhausted.

Abstracts are given of presentations given at a project review meeting held at Albuquerque, NM. The proceedings cover the past accomplishments and current activities of the Photovoltaic Systems Research, Balance-of-System Technology Development and System Application Experiments Projects at Sandia National Laboratories. The status of intermediate system application experiments and residential system analysis is emphasized. Some discussion of the future of the Photovoltaic Program in general, and the Sandia projects in particular is also presented. (ERA citation 07:049738)

DE82012423 PC **A11**/MF **A01**
Aerospace Corp., El Segundo, CA. Energy and Resources Div.
Ocean Thermal Energy Conversion (OTEC) Cost and Performance Simulation and Analysis. Volume IV. Appendix.
Sep 78, 230p ATR-78-7699-01-3-V.4
Contract AT03-76ET20447
Portions of document are illegible.

Included are: the OTECOST program listing, sample case input and output data listings, a list of symbols, and the OTECOST validation flow. (ERA citation 07:056581)

DE82012748 PC **A07**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Civil Engineering.
Wave Energy Absorption from Oscillating Water Columns.
C. C. Mei, and M. H. Rolfes. 1982, 141p DOE/ET/21062-1
Contract AC02-77CH00178
Portions of document are illegible.

The characteristics of the oscillating water column wave energy device are investigated under the assumptions of infinite water depth and excitation by harmonic, small amplitude waves. Expressions describing the amplitude of water motion inside the column, velocity and pressure at the turbine inlet, and energy absorption of the devices are presented. A vertical surface piercing hollow circular cylinder is examined whose air chamber area decays exponentially above the still-water-level. A power takeoff device is located a finite distance above the still-water-level where the energy absorption of the device is modeled linearly and/or quadratically with the air velocity at the turbine inlet. The problem of two identical interacting oscillating water column devices such as the one just described is also investigated. (ERA citation 07:043176)

DE82900764 PC **A02**/MF **A01**
Risoe National Lab., Roskilde (Denmark).
Working Report and Instruction for Repairing of Three Pieces of Wings from a 30 KW Riisagermill.
J. Ethelfeld, F. Jensen, J. Kjoeller, and A. Lystrup. Jan 80, 20p RISO-M-2207

This report is made to give the owners of Riisager windmills an instruction to make service and repair of the fiber glass wings. (ERA citation 07:003924)

N82-33826/6 PC **A06**/MF **A01**
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
Design Description of the Tangaye Village Photovoltaic Power System.
J. E. Martz, and A. F. Ratajczak. Jun 82, 113p NAS 1.15:82917, E-1305, NASA-TM-82917

The engineering design of a stand alone photovoltaic (PV) powered grain mill and water pump for the village of Tangaye, Upper Volta is described. The socioeconomic effects of reducing the time required by women in rural areas for drawing water and grinding grain were studied. The suitability of photovoltaic technology for use in rural areas by people of limited technical training was demonstrated. The PV system consists of a 1.8-kW (peak) solar cell array, 540 ampere hours of battery storage, instrumentation, automatic controls, and a data collection and storage system. The PV system is situated near an improved village well and supplies d.c. power to a grain mill and a water pump. The array

is located in a fenced area and the mill, battery, instruments, controls, and data system are in a mill building. A water storage tank is located near the well. The system employs automatic controls which provide battery charge regulation and system over and under voltage protection. This report includes descriptions of the engineering design of the system and of the load that it serves; a discussion of PV array and battery sizing methodology; descriptions of the mechanical and electrical designs including the array, battery, controls, and instrumentation; and a discussion of the safety features. The system became operational on March 1, 1979.

N82-34187/6 PC **A02**/MF **A01**
College of William and Mary, Newport News, VA.
Broad Band Sound from Wind Turbine Generators.
H. H. Hubbard, K. P. Shepherd, and F. W. Grosveld.
Nov 81, 16p NAS 1.26:165810, NASA-CR-165810
Contracts NAS1-14970, NAG1-166
Prepared in Cooperation with Bionetics Corp., Hampton, VA. Presented at the 102ND Meeting of the Acoust. Soc. Of AM., Miami Beach, Fla., 1-4 Dec. 1981.

Brief descriptions are given of the various types of large wind turbines and their sound characteristics. Candidate sources of broadband sound are identified and are rank ordered for a large upwind configuration wind turbine generator for which data are available. The rotor is noted to be the main source of broadband sound which arises from inflow turbulence and from the interactions of the turbulent boundary layer on the blade with its trailing edge. Sound is radiated about equally in all directions but the refraction effects of the wind produce an elongated contour pattern in the downwind direction.

PATENT-4 338 560 Not available NTIS
Department of the Navy, Washington, DC.
ALBEDD Radiation Power Converter.
Patent,
Leo W. Lemley. Filed 12 Oct 79, patented 6 Jul 82, 6p AD-D009 730/3, PAT-APPL-6-084 253
Supersedes PAT-APPL-6-084 253, AD-D006 900.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A heat-to-electricity converter, particularly adaptable for use by high-altitude platforms such as aerostats and space stations, for changing heat energy of radiation form the earth to electric power during day and/or night. The converter includes an array of heat-collector sources and radiator heat sinks interconnected by thermoelectric n- and p- doped material elements. The array is fabricated on thin films of plastic and may be mounted on a high-altitude platform. The collectors absorb infrared (IR) heat from the earth and conduct the heat to the thermoelectric elements. The elements convert the heat to electricity. The absorbed heat less the heat converted to electricity is emitted to space by the radiator heat sinks. (Author)

PB83-104745 PC **A05**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
Hail Impact Testing Procedure for Solar Collector Covers,
David R. Jenkins, and Robert G. Mathey. Apr 82, 87p NBSIR-82-2487
Sponsored in part by Department of Energy, Washington, DC.

This report presents laboratory test results which simulate hail impact on solar collector covers. The general objective of the work is to contribute to the development of a test method for evaluating the resistance of solar collector covers to this type of loading. A procedure for such testing is described as well as results obtained with ice balls impacting four typical collector cover materials. Aspects which are discussed include the preparation of ice balls, the design and operation of a launcher for ice ball propulsion, the method of mounting cover panel specimens, the selection of ice ball velocity and impact location, and techniques for failure or damage assessment.

PB83-108076 PC **A02**/MF **A01**
Guam Univ., Agana. Water and Energy Research Inst. of the Western Pacific.
Assessment of Low Head, Micro Hydroelectric Equipment for Use on Small Tropical Islands.
Technical rept.,
Dinshaw N. Contractor, and Stephen J. Winter. Apr 82, 17p TR-33, W83-00268, OWRT-A-024-GUAM(1) DI-14-34-0001-1112

An investigation was made of two potential sites on an underdeveloped tropical island (Ponape island) for installing a micro-hydroelectric generation unit. The technology for this development already exists and has been proven to be cost-effective in developed countries. Preliminary investigations were made to size candidate units, manufacturers of hydro equipment suitable for installation at these sites were identified, and price quotations were obtained. Daily discharge data for four rivers were used to obtain flow-duration curves. The curves indicated that the hydrologic regimes of the rivers were similar. Hence, the mean line through the curves could be used as a prediction for other watersheds in the same general area. Estimated flow and power-duration curves were developed for each of the two sites. Recommendations for equipment requirements were derived for each site from the power-duration curves.

PB83-111781 PC **E10**/MF **E10**
Commission of the European Communities, Luxembourg.
Studie zur Abschaetzung Erzielbarer Wirkungsgrade und Kosten bei der Verstromung von Wasserstoff (Study of the Estimation of Likely Levels of Efficiency and Cost Attainable in the Generation of Electric Power, Based on Hydrogen),
H. J. Sternfeld, H. Wojkowsky, and W. Schnurnberger. c1981, 238p EUR-7529-DE
Text in German.
Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

Processes for the generation of peak electric power in the range of 25 MW to 100 MW, based on fuel cells and heat engines using hydrogen as fuel, are compared for their feasibility and economics. Fuel cells examined include low and high temperature systems. Their thermodynamics and kinetics are explained and present and future developments are considered. Methods of hydrogen manufacture and storage, and of installing and operating fuel cell power stations are costed. Processes based on heat engines include the use of gas and steam turbines using hydrogen as fuel, or hydrogen/oxygen without or with added steam. The relevant thermodynamics are explained and costs are estimated.

PB83-114066 PC **A18**/MF **A01**
ICF, Inc., Washington, DC.
The Final Set of Analyses of Alternative New Source Performance Standards for New Coal-Fired Powerplants.
Draft rept.
30 May 79, 417p
Sponsored in part by Environmental Protection Agency, Washington, DC., and Department of Energy, Washington, DC.

This report was prepared for the EPA and the Dept. of Energy. The findings of analyses of alternative new source performance standards are presented herein. All the assumptions and scenario specifications employed for the analyses reported in Still Further Analyses of Alternative NSP Standards for New Coal-Fired Powerplants were employed except: some of the scrubber cost estimates were revised by EPA; EPA developed several new specifications of alternative standards; and a few forecasts were made to reflect the effect of alternative standards on emissions after all existing coal-fired capacity is retired. EPA decided to include considerations of dry scrubbing in this set of analyses. In previous analyses, all the cost estimates were developed for 'wet scrubbing'. EPA requested that 14 alternative standards be assessed. These alternatives were specified in terms of: alternative ceilings; alternative scrubber costs; and alternative levels of partial or variable scrubbing for lower sulfur coals.

PB83-118257 PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Sea Grant Coll. Program.
Small Scale Tidal Power Plants. Part 1: Performance 82-9. Part 2: Capital Cost 82-10,
James A. Fay, and Mark A. Smachlo. Jul 82, 74p MITSG-82-9, NOAA-82081703
Grant NA79AA-D-00101

Small scale tidal power plants - having electric power between one and a hundred megawatts approximately - possess several attractive economic and environmental benefits. The dynamical behavior of such systems is calculated in terms of dimensionless variables and parameters so that the size of the system is inconsequential (except for one parameter related to the slope of the walls of the tidal basin). Two measures of system performance are defined: capacity factor (ratio of average to rated power) and effectiveness (ratio of average to ideal tidal power). It was found that improving both parameters is mutually incompatible so that an economic analysis will determine the optimum values of the system design and performance parameters. The effects of variation of tidal range and basin shape were determined. Using typical variable flow properties of low head hydroturbines, a favorable design head could be determined from the analysis.

PB83-854885 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Public Opinion and Nuclear Power. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 101p
Supersedes PB82-856543.Prepared in cooperation with the Department of Energy, Washington, DC.

The bibliography cites reports relating to public perception of nuclear power, including the risks of nuclear accidents and low level radiation hazards as viewed by proponents of nuclear power. The need for educational programs to enlighten the public regarding the risks vs. benefits, and technical understanding of nuclear power, are considered. (This updated bibliography contains 96 citations, 30 of which are new entries to the previous edition.)

PB83-855049 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Solar Power Plants: Economic Analysis. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 377p
Supersedes PB82-861220.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning economic analyses and assessments of solar power plants, solar power supplies, and solar energy systems. Techniques, technology, commercialization, and financial incentives for small-scale and large-scale, ground-based and satellite-based applications and apparatus are discussed. (This updated bibliography contains 328 citations, 22 of which are new entries to the previous edition.)

10C. Energy Storage

ERATL-83/06 PC**$50.00**
ERA Technology Ltd., Leatherhead (England).
ERA Battery Seminar and Exhibition (3rd) Held at the Royal Garden Hotel, London on January 14th, 1982,
Michael Webb. Dec 81, 142p ERA-81-102

The following papers were presented: Memory protection batteries--a total answer; Lithium copper oxide batteries for memory preservation and other low drain applications; Lithium thionyl chloride batteries for memory preservation; Lithium systems as possible replacements in existing battery configurations; examining the advantages and limitations of lithium primary and conventional secondary batteries; Battery selection and in-service costs (by M.L. Whitehead, ERA Technology); Advanced nickel cadmium systems for tomorrows applications; Nickel cadmium holds the balance of power; Sealed lead acid cells in decentralized applications; The selection of standby batteries for

security applications; Differing charge regimes for nickel cadmium and lead acid batteries.

ERATL-83/12 PC$50.00
ERA Technology Ltd., Leatherhead (England).
An Evaluation of Commercial Battery Discharge Indicators.
Final rept.,
M. L. Whitehead. Apr 81, 63p ERA-81-35

Eleven commercially available battery discharge monitoring and overdischarge protection devices were evaluated. It was found that the rate of battery discharge was the overriding factor influencing results. Since in practice traction batteries experience a wide range of operating duties it is felt that no one product is sufficient for all cases. The requirements for improved battery monitoring are discussed and a possible new approach is outlined for developing comprehensive battery instrumentation based on dynamic impedance measurements. Applications would include bi-direction state of charge indicators for advanced electric road vehicles and state of health monitoring for standby applications.

N82-33824/5 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.
Use of the Charge/Discharge (C/D) Ratio to Aument Voltage Limit (V sub T) Charge Control in the Erbs Spacecraft.
G. Halpert. 8 Jul 82, 44p NAS 1.15:83991, G82-0023-7, NASA-TM-83991

A 50-ampere hour nickel cadmium cell test pack was operated in a power profile simulating the orbit of the Earth Radiation Budget Satellite (ERBS). The objective was to determine the ability of the temperature compensated voltage limit (V sub T) charge control system to maintain energy balance in the half sine wave-type current profile expected of this mission. The four-cell pack (50 E) was tested at the Naval Weapons Support Center (NWSC) at Crane, Indiana. The ERBS evaluation test consisted of two distinct operating sequences, each having a specific purpose. The first phase was a parametric test involving the effect of V sub T level, temperature, and Beta angle on the charge/discharge (C/D) ratio, an indicator of the amount of overcharge. The second phase of testing made use of the C/D ratio limit to augment the V sub T charge limit control. When the C/D limit was reached, the current was switched from the taper mode to a C/67 (0.75 A) trickle charge. The use of an ampere hour integrator limiting the overcharge to a C/67 rate provided a fine tuning of the charge control technique which eliminated the sensitivity problems noted in the initial operating sequence.

PATENT-4 338 382 Not available NTIS
Department of the Air Force, Washington, DC.
Battery Safety Terminal.
Patent,
David H. Fritts. Filed 11 Mar 81, patented 6 Jul 82, 7p AD-D009 742/8, PAT-APPL-6-242 815
Supersedes PAT-APPL-6-242 815.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A safety electrical disconnect is incorporated within the battery terminal to break the circuit upon excessive internal pressure build-up due to extended discharge or over charge, A burst diaphragm ruptured by excessive pressure forces a ball through a normally restraining split ring to thereby interrupt the electrical circuit continuity. The ball, upper seat and split ring can be designed to either prevent further escape for internal gas or provide for controlled venting. The burst diaphragm may be replaced by another pressure sensing device such as a pop-off valve. For high current capability, the ball and ring may be replaced by a suitable arrangement such as a sliding cylindrical connector. (Author)

11. MATERIALS

11A. Adhesives and Seals

PB83-853408 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Acrylic Adhesives. 1973-November, 1982 (Citations from the Rubber and Plastics Research Association Data Base).
Rept. for 1973-Nov 82.
Nov 82, 234p
Supersedes PB82-857301.

This bibliography contains citations concerning formulation, physical properties, and uses of acrylic derivative adhesives. Cyanoacrylate, methacrylate, water based and anaerobic acrylic polymer adhesives are included. Applications discussed include automotives, labels, and electronics. Base materials considered are woods, metals, and polymers. (This updated bibliography contains 281 citations, 51 of which are new entries to the previous edition.)

PB83-854273 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Seals And Sealants: Physical Stability. 1973-November, 1982 (Citations from the Rubber and Plastics Research Association Data Base).
Rept. for 1973-Nov 82.
Nov 82, 128p
Supersedes PB82-861063.

This bibliography contains citations concerning the physical stability of seals and sealants used in hydraulic systems, geothermal drilling equipment, solar energy conversion, aerospace, and motor vehicles. Polymers, elastomers, and rubbers are the materials used for seals and sealants. Degradation-resistant materials, material specifications, and standards for seals and sealants are also included. (This updated bibliography contains 123 citations, 17 of which are new entries to the previous edition.)

11B. Ceramics, Refractories, and Glasses

DE82010824 MF **A01**
General Electric Co., St. Petersburg, FL. Neutron Devices Dept.
Improvements in the Metallization of Ceramics.
1981, 4p DOE/DP/00656-T1
Contract AC04-76DP00656
C French Patent No. 1,120,655.Portions of document are illegible.
Best available copy from document source. Available in microfiche only.

The invention relates to improvements in the metallization of ceramics especially but not exclusively designed to be employed in electric work, and in particular in radio (high frequency). The main characteristic of this method is that it incorporates a silver coating for metallizing ceramics by plastering those parts of the surface to be metallized, and then baking the ceramics thus painted with titanium hydride or a similar metal salt, for which silver serves effectively as a flux for the baking by lowering the melting point of this salt. (ERA citation 07:047414)

11C. Coating, Colorants, and Finishes

N82-33494/7 PC **A07**/MF **A01**
Solar Turbines International, San Diego, CA.
Advanced Ceramic Coating Development for Industrial/Utility Gas Turbines.
Final Report, 11 Mar. 1979 - 1 Sep. 1981.
J. W. Vogan, and A. R. Stetson. Jan 82, 128p NAS 1.26:169852, DOE/NASA/0109-1, NASA-CR-169852
Contracts DEN3-109, DE-AI01-77ET-3111

A program was conducted with the objective of developing advanced thermal barrier coating (TBC) systems. Coating application was by plasma spray. Duplex, triplex and graded coatings were tested. Coating systems incorporated both NiCrAly and CoCrAly bond coats. Four ceramic overlays were tested: ZrO2.8203; CaO.TiO2; 2CaO.SiO2; and MgO.Al2O3. The best overall results were obtained with a CaO.TiO2 coating applied to a NiCrAly bond coat. This coating was less sensitive than the ZrO2.8Y2O3 coating to process variables and part geometry. Testing with fuels contaminated with compounds containing sulfur, phosphorus and alkali metals showed the zirconia coatings were destabilized. The calcium titanate coatings were not affected by these contaminants. However, when fuels were used containing 50 ppm of vanadium and 150 ppm of magnesium, heavy deposits were formed on the test specimens and combustor components that required frequent cleaning of the test rig. During the program Mars engine first-stage turbine blades were coated and installed for an engine cyclic endurance run with the zirconia, calcium titanate, and calcium silicate coatings. Heavy spalling developed with the calcium silicate system. The zirconia and calcium titanate systems survived the full test duration. It was concluded that these two TBC's showed potential for application in gas turbines.

PB83-120014 PC **A04**/MF **A01**
Schaefer (Fritz) G.m.b.H., Neunkirchen (Germany, F.R.).
Recycling Plant for Paint Sludges.
K. H. Berewinkel. Oct 82, 65p BMFT-FB-T-81-125
Trans. of mono. Bau einer Demonstrationsanlage zur Verminderung und Verwertung von Lackschlammen, n.p., 85p Jul 81. See also N82-15203.

The degree of paint utilization in spray painting is unsatisfactory in the present state of technology, the amount of overspray being too large. A demonstration plant for decreasing the quantity of, and recycling, paint sludges has the object of showing that an improvement in the situation is possible. This can be achieved by: improved control of the automatic system; paint recycling in the spraying booths; and, reprocessing of paint sludge. These devices can be used singly or in combination with one another in all cases where paints in sufficiently large quantities are used in the spraying process.

PB83-854166 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Nondestructive Testing of Surface Coatings, and Paints. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 406p
Supersedes PB82-858473.

This bibliography contains citations concerning techniques and technology for the nondestructive testing or examination of surfaces and surface coatings, e.g., paints, plastic coatings, ceramic coatings, etc., for the detection of flaws or defects which affect their properties and behavior. Both qualitative and quantitative analyses are included. (This updated bibliography contains 324 citations, 186 of which are new entries to the previous edition.)

PB83-854240 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Sputter Coating of Tantalum and Tantalum Compounds. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 178p
Supersedes PB82-860149.

This bibliography contains citations concerning the structural properties of sputtered tantalum and tantalum compounds. The preparation of thin film capacitors and resistors is described. The electrical properties of the sputtered films are also included. The influence of the substrate on the properties of the coatings is also considered, and includes adherance of the coating to the substrate, as well as the effects of impurities on coating integrity. (This updated bibliography contains 275 citations, 114 of which are new entries to the previous edition.)

PB83-854257 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Coating Process for the Application of Protective Coatings: Diffusion Coatings. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 193p
Supersedes PB82-860313.

This bibliography contains citations concerning the use of diffusion coatings for the corrosion protection of metals exposed to a wide variety of corrosive atmospheres in terms of methods used for the applications of coatings. Emphasis is placed on the oxidation of heat resistant alloys of the refractory metal group. Coating processes include hot dip aluminizing, boriding, plasma spraying, and phosphate coatings. Protection against hot alkaline chemicals and liquid metals is also discussed. (This updated bibliography contains 290 citations, 19 of which are new entries to the previous edition.)

PB83-854331 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Metal Cutting And Forming Tool Coatings. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 121p
Supersedes PB82-860768.

This bibliography contains citations concerning the bond and wear characteristics of hard, antifriction, and thermal insulating coatings on metal cutting and forming tools and dies. The metal carbides and oxides, ceramic coatings and their deposition techniques; CVD, ion nitriding, and sputtering are included. The effects of coatings on tool wear, and performance comparisons of various substrate/coating combinations are discussed. (This updated bibliography contains 129 citations, 24 of which are new entries to the previous edition.)

PB83-854489 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Protective Coatings for Pipelines. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 140p
Supersedes PB81-858706.

This bibliography contains citations concerning research and development of internal and external protection of pipelines. Techniques include cathodic protection, alloy overlays and plastic tape wrappings. Applications of special coatings for use with hot fluid pipelines are discussed. (This updated bibliography contains 163 citations, 20 of which are new entries to the previous edition.)

PB83-854703 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Protective Coatings for Pipelines. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 211p
Supersedes PB82-858564.

This bibliography contains citations concerning the use of protective coatings and cathodic protection for the prevention of pipeline corrosion. The use of spray and wrapped coatings for underground and underwater installations is also discussed. Materials used include epoxy resins, concrete, and metal overlays. (This updated bibliography contains 336 citations, 85 of which are new entries to the previous edition.)

PB83-854711 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Protective Coatings for Pipelines. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 349p
Supersedes PB82-858689.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning protective coatings for pipelines in terms of both internal and external corrosion and erosion. Topics include gas, water, and oil lines. Coating materials include plastics, alloy overlays, urethanes,and composites. Special problems associated with the pipeline transport of fluidized coal and geothermal brines are also discussed. (This updated bibliography contains 159 citations, 30 of which are new entries to the previous edition.)

PB83-854786 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Protective Coatings for Aluminum and Aluminum Alloys. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 190p
Supersedes PB82-860305.

This bibliography contains citations concerning protective coatings for aluminum and aluminum base alloys. The use of electroplating is excluded. The use of paints, metal coatings, anodization, corrosion inhibitors, enameling, cathodic protection, and passivation techniques is included. The minimization of stress corrosion cracking in salt water is emphasized. (This updated bibliography contains 277 citations, 86 of which are new entries to the previous edition.)

PB83-854836 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Protective Coatings: Electrophoretic Deposition. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 142p
Supersedes PB82-863044.

This bibliography contains citations concerning the use of electrophoresis for the appliation of protective coatings. Emphasis is placed on the application of paints, ceramic coatings and organic coatings in general, as well as the deposition of metal carbides. The application of these coatings to a wide variety of materials for corrosion protection is also discussed. (This updated bibliography contains 246 citations, 39 of which are new entries to the previous edition.)

11D. Composite Materials

N82-33431/9 PC **A06**/MF **A01**
Hughes Aircraft Co., Culver City, CA.
Application of In Situ Fiberization for Fabrication of Improved Strain Isolation Pads and Graphite Epoxy Composites.
Final Report.
R. W. Rosser, R. W. Seibold, and D. I. Basiulis. Sep 82, 125p NAS 1.26:3616, REPT-76-21-13, NASA-CR-3616
Contract NAS1-16437

The feasibility of applying the in situ fiberization process to the fabrication of strain isolation pads (SIP) for the Space Shuttle and to the fabrication of graphite-epoxy composites was evaluated. The ISF process involves the formation of interconnected polymer fiber networks by agitation of dilute polymer solutions under controlled conditions. High temperature polymers suitable for SIP use were fiberized and a successful fiberization of polychloro trifluoroethylene, a relatively high melting polymer, was achieved. Attempts to fiberize polymers with greater thermal stability were unsuccessful, apparently due to characteristics caused by the presence of aromaticity in the backbone of such materials. Graphite-epoxy composites were fabricated by interconnecting two dimensional arrays of graphite fiber with polypropylene IS fibers with subsequent epoxy resin impregnation. Mechanical property tests were performed on laminated panels of this material to evaluate intralaminar and interlaminar shear strength, and thus fracture toughness. Test results were generally unpromising.

N82-33432/7 PC **A03**/MF **A01**
General Dynamics/Convair, San Diego, CA.
Development of Tough, Moisture Resistant Laminating Resins.
Final Report.
R. A. Brand, and E. S. Harrison. Sep 82, 50p NAS 1.26:3614, NASA-CR-3615
Contract NAS1-15859

Tough, moisture resistant laminating resins for employment with graphite fibers were developed. The new laminating resins exhibited cost, handleability and processing characteristics equivalent to 394K (250 F) curing epoxies. The laminating resins were based on bisphenol A dicyanate and monofunctional cyanates with hydrophobic substituents. These resins sorb only small quantities of moisture at equilibrium (0.5% or less) with minimal glass transition temperature depression and represent an improvement over epoxies which sorb around 2% moisture at equilibrium. Toughening was accomplished by the precipitation of small diameter particles of butadiene nitrile rubber throughout the resin matrix. The rubber domains act as microcrack termini and energy dissipation sites, allowing increased stress accommodation prior to catastrophic failure. A unique blend of amine terminated butadiene nitrile elastomer (MW 2,000) and a high nitrile content butadiene nitrile rubber yielded the desired resin morphology.

N82-33433/5 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Washington, DC.
Strength Diagrams of Fibrous Composites with Unidirectional Structure.
V. S. Ivanova, and L. M. Ustinov. Sep 82, 10p NAS 1.15:76975, NASA-TM-76975
Transl. into English from Izv. Akad. Nauk Sssr, Metally (Ussr), No. 2, Mar. - Apr. 1970 p 176-180. Transl. By Scientific Translation Service, Santa Barbara, Calif.

The dependence of the composite strength on the volume proportion of fiber and the transfer factor is analyzed. Four types of diagrams are constructed for the strength of composites as a function of the volume proportion of fibers and the transfer factor.

N82-33434/3 PC **A14**/MF **A01**
Rensselaer Polytechnic Inst., Troy, NY.
Composite Structural Materials.
Semiannual Progress Report, 30 Sep. 1981 - 30 Apr. 1982.
G. S. Ansell, R. G. Loewy, and S. E. Wiberley. Jul 82, 309p NAS 1.26:169345, SAR-42, NASA-CR-169345
Contract NGL-33-018-003
Sponsored in Part by AFOSR.

Research in the basic composition, characteristics, and processng science of composite materials and their constituents is balanced against the mechanics, conceptual design, fabrication, and testing of generic structural elements typical of aerospace vehicles so as to encourage the discovery of unusual solutions to problems. Detailed descriptions of the progress achieved in the various component parts of his program are presented.

N82-33435/0 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Positron Annihilation Spectroscopy with Magnetically Analyzed BEAMS.
J. J. Singh, W. H. Holt, and W. Mock, Jr.. Aug 82, 20p NAS 1.15:84535, NASA-TM-84535

Lifetime measurements with magnetically analyzed positron beams were made in condensed media with uniform and non-uniform properties. As expected, the lifetime values with magnetically analyzed positron beams in uniform targets are similar to those obtained with conventional positron sources. The lifetime values with magnetically analyzed beams in targets which have non-uniform properties vary with positron energy and are different from the conventional positron source derived lifetime values in these targets.

N82-33436/8 PC **A03**/MF **A01**
Advanced Research and Applications Corp., Sunnyvale, CA.
Study of Fatigue Durability of Advanced Composite Materials under Conditions of Accelerated Loading.
H. M. Shih. Oct 79, 30p NAS 1.26:166405, NASA-CR-166405
Contract NAS2-10061

The effect of temperature on the tension-tension fatigue life of the T300/5208 graphite/epoxy angle-ply laminate system was investigated in an effort to develop an acceptable and reliable method of accelerated loading. Typical S log sub 10 N curves were determined experimentally at 25 C, 75 C, and 115 C. The time-temperature superposition principle was employed to find the shift factors of uniaxial fatigue strength, and a general linear equation of S log sub 10 N for shifting purpose was established. The combined techniques of cyclic creep measurements and optical microscopy upon fatigue failure allow some assessment of the possible physical basis of S log 10 N curve shifting. Before fatigue, the laminates at all test temperatures and stress levels undergo a unique damage mechanism during fatigue loading. It is concluded that an accelerated loading method is feasible.

N82-33437/6 PC **A03**/MF **A01**
Advanced Research and Applications Corp., Sunnyvale, CA.
Accelerated Fatigue Durability of a High Performance Composite.
Final Report.
A. Rotem. Sep 82, 32p NAS 1.26:166407, NASA-CR-166407
Contract NAS2-10228
Presented at the Astm Conf., San Francisco, 22-23 May 1979; Presented as Fatigue Behavior of Graphite-Epoxy Laminates at Elevated Temperatures.

The fatigue behavior of multidirectional graphite-epoxy laminates was analyzed theoretically and experimentally in an effort to establish an accelerated testing methodology. Analysis of the failure mechanism in fatigue of the laminates led to the determination of the failure mode governing fracture. The nonlinear, cyclic-dependent shear modulus was used to calculate the changing stress field in the laminate during the fatigue loading. Fatigue tests were performed at three different temperatures: 25 C, 74 C, and 114 C. The prediction of the S-N curves was made based on the artificial static strength artificial static strength at a reference temperature and the fatigue functions associated with them. The prediction of an S-N curve at other temperatures was performed using shifting factors determined for the specific failure mode. For multidirectional laminates, different S-N curves at different temperatures could be predicted using these shifting factors. Different S-N curves at different temperatures occur only when the fatigue failure mode is matrix dominated. It was found that whenever the fatigue failure mode is fiber dominated, temperature, over the range investigated, had no influence on the fatigue life. These results permit the prediction of long-time, low temperature fatigue behavior from data obtained in short time, high temperature testing, for laminates governed by a matrix failure mode.

N82-33737/9 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Improved Damage Tolerance of Titanium by Adhesive Lamination.
W. S. Johnson. Jul 82, 35p NAS 1.15:84525, NASA-TM-84525
Submitted for Publication. Presented at the 23RD Aiaa/Asme/Asce/AHS Struct., Structural Dyn., and Mater. Conf., New Orleans, 10-12 May 1982.

Basic damage tolerance properties of Ti-6A1-4V titanium plate can be improved by laminating thin sheets of titanium with adhesives. Compact tension and center cracked tension specimens made from thick plate, thin sheet, and laminated plate (six plies of thin sheet) were tested. The fracture toughness of the laminated plate was 39 percent higher than the monolithic plate. The laminated plate's through the thickness crack growth rate was about 20 percent less than that of the monolithic plate. The damage tolerance life of the surface cracked laminate was 6 to over 15 times the life of a monolithic specimen. A simple method of predicting crack growth in a crack ply of a laminate is presented.

N82-34335/1 PC **A03**/MF **A01**
Christopher Newport Coll., Newport News, VA. Dept. of Chemistry.
Theoretical Studies of Radiation Effects in Composite Materials for Space Use.
Final Report.
C. K. Chang, and E. Kamaratos. Sep 82, 40p NAS 1.26:3618, NASA-CR-3618
Grant NSG-1614

Tetraglycidyl 4,4'-diamino diphenyl methane epoxy cured with diamino diphenyl sulfone was used as a model compound. Computer programs were developed to calculate (1) energy deposition coefficients of protons and electrons of various energies at different depths of the material; (2) ranges of protons and electrons of various energies in the material; and (3) cumulative doses received by the composite in different geometric shapes placed in orbits of various altitudes and inclination. A preliminary study on accelerated testing was conducted and it was found that an elliptical equitorial orbit of 300 km perigee by 2750 km apogee can accumulate, in 2 years or less, enough radiation dose comparable to geosynchronous environment for 30 years. The local plasma model calculated the mean excitation energies for covalent and ionic compounds. Longitudinal and lateral distributions of excited species by electron and proton impact as well as the probability of overlapping of two tracks due to two charged particles within various time intervals were studied.

PB83-106096 Not available NTIS
National Bureau of Standards, Washington, DC.
Absorbed Moisture and Stress Wave Propagation in Graphite/Epoxy.
Final rept.,
R. D. Kriz. 1981, 2p
Pub. in Compos. Technol. Rev. 3, n4 p154-155 1981.

By diffusion, the epoxy component of many fiber-reinforced materials can absorb moisture, which is realized as an increase in weight and a decrease in elastic stiffness. This change in elastic stiffness is sufficient to shift the direction of stress-wave propagation in graphite/epoxy.

PB83-118844 PC **A03**/MF **A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg. Coll. of Engineering.
The Room-Temperature Shapes of Four-Layer Unsymmetric Cross-Ply Laminates.
Final rept. Jun 81-Mar 82,
Michael W. Hyer. Apr 82, 48p VPI-E-82-12
Grant AFOSR-81-0195

A previous approximate theory for predicting the room-temperature shapes of unsymmetric laminates is examined in light of the assumptions regarding the in-plane strains. The previous theory, which was a geometrically nonlinear extension of classical lamination theory, was felt to be restrictive and this paper develops a new theory in which these restrictions are relaxed. It is shown that despite the previous concern, there is little difference between the previous theory and this theory. This paper presents numerical results for the inplane residual strains of unsymmetric laminates which have cooled from curing into a cylindrical room-temperature shape. It is shown that the residual strains are compressive and practically independent of spatial location on the laminate. In another facet of the paper, the room-temperature shapes of all four-layer unsymmetric cross-ply laminates are predicted. There are only four unique stacking arrangements for this category of laminates and it is shown that their shapes are a strong function of their size and their stacking arrangement.

11E. Fibers and Textiles

PB83-854125 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Cuprammonium Rayons: Fabrication, Testing, and Applications. 1976-November, 1982 (Citations from World Textile Abstracts).
Rept. for 1976-Nov 82.
Nov 82, 69p
Supersedes PB81-873770.Prepared in cooperation with Shirley Inst., Manchester, (England).

This bibliography contains citations concerning the manufacturing, evaluation, and uses of cuprammonium rayons. Topics discussed include dyeing of fibers, membrane technology, soil resistance, and properties of fibers. Pollution control in cuprammonium rayon production is also discussed. (This updated bibliography contains 76 citations, 18 of which are new entries to the previous edition.)

PB83-854158 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Fatigue Testing Of Natural And Synthetic Fabrics. 1975-November, 1982 (Citations from World Textile Abstracts).
Rept. for 1975-Nov 82.
Nov 82, 95p
Supersedes PB81-865792.Prepared in cooperation with Shirley Inst., Manchester, (England).

This bibliography contains citations concerning fatigue and abrasion testing of fibers in nonwoven and woven fabrics, yarns, and composites. Biaxial rotation, accelerated, and environmental fatigue testing on a wide variety of materials are considered. (This updated bibliography contains 109 citations, 16 of which are new entries to the previous edition.)

11F. Metallurgy and Metallography

DE81027996 PC **A02**/MF **A01**
Battelle Pacific Northwest Labs., Richland, WA.
H Sub 2 S Adsorption of Plasticity Strained Iron.
M. T. Thomas, D. R. Baer, and R. H. Jones. May 81, 8p PNL-SA-9546, CONF-810584-2
Contract AC06-76RL01830
NATO advanced study institute on atomistics of France, Corsica, France, 22 May 1981.

The purpose of this paper is to present data showing an increased adsorption rate for H sub 2 S on plastically strained iron. There has been considerable speculation in the literature concerning the effect of strain on the enhanced corrosion and surface reactivity, but there has been no direct experimental evidence that strain does increase surface reactivity. To understand the possible effects of strain enhanced adsorption on crack initiation and growth is the main motivation for these studies. It is realized that strain enhanced adsorption may also be important for catalytic corrosion and wear properties of materials. (ERA citation 06:032258)

DE82007003 PC **A02**/MF **A01**
Oak Ridge Y-12 Plant, TN.
Internal Hydrogen Embrittlement in Uranium Alloys.
G. L. Powell. 22 Dec 81, 22p Y/DU-222, CONF-8105139-1
Contract W-7405-ENG-26
ASM metallurgical technology of uranium and uranium alloys seminar, Gatlinburg, TN, USA, 26 May 1981.
Microfiche only after original copies are exhausted.

This paper describes the use of measured hydrogen solubilities and diffusivities to establish methods for heat treating uranium alloys under conditions such that predictable and homogeneous hydrogen contamination is obtained in alloy specimens having well-defined metallurgical histories. From such a series of specimens, correlations are drawn between theoretical hydrogen content and measured properties such as tensile elongation and reduction in area, tensile strength, hydrogen trace analysis, and fracture characteristics. Such correlations are presented for the following alloys: U-0.75Ti, U-2.3Nb, U-6Nb, U-8.5Nb, U-10Nb, U-10Mo, U-7.5Nb-2.5Zr, and unalloyed uranium. (ERA citation 07:044187)

DE82012335 MF **A01**
Sandia National Labs., Albuquerque, NM.

Effect of Surface Preparation and Heat Treatment on the Interfacial Resistance, Friction, and Wear of Precious-Metal Electrical-Contact Alloys.
R. W. Rohde, and L. E. Pope. 1982, 8p SAND-81-2598C, CONF-820912-1
Contract AC04-76DP00789
Holm conference on electrical contacts, Chicago, IL, USA, 1 Sep 1982.
Best available copy from document source. Available in microfiche only.

The precious metal alloy couple (Pd-Ag-Cu-Au-Pt) with (Au-Cu-Pt-Ag) finds wide application as a wiping electrical contact. Experience at this laboratory in component applications has indicated that surface preparation methods can have a substantial effect on subsequent contact performance. Additionally, investigations at Sandia have shown that the normally recommended heat treat process is in a time and temperature regime where alloy properties are rapidly changing. This can easily cause batch to batch variations in material properties such as microstructure, hardness and bulk resistance. This work investigated the effects of surface preparation and heat treatment on the contact resistance, friction and wear of the alloy couple. (ERA citation 07:054407)

ERATL-83/11 PC**$17.00**
ERA Technology Ltd., Leatherhead (England).
The Organisation of Long Term High Temperature Materials Design Data,
M. P. E. Desvaux. 28 Apr 81, 20p ERA-81-42
A paper presented for the ERA visit to China on 28 April 1981.

This report describes the need for long term high temperature materials design data, and the means used by the Germans, Japanese and British industries to obtain such data on a collaborative basis. It describes in depth ERA Project 2021 - Creep of Steel - which is rapidly becoming the international medium for establishing long term high temperature properties of steels as well as some more general aspects of elevated temperature behavior.

N82-33430/1 PC **A04**/MF **A01**
Alabama Univ. in Huntsville.
Containerless Processing Technology Analysis.
Final Report, 8 May 1980 - 31 Aug. 1982.
J. E. Rush. 6 Sep 82, 53p NAS 1.26:170624, NASA-CR-170624
Contract NAS8-33731

Research on acoustic levitation, air-jet levitation, and heat transfer from molten samples is reported. The goal was to obtain a better understanding and improving the quality of containerless processing systems. These systems are applied to the processing of materials in situations in which contact with a container must be avoided, and have potential application in both ground based and orbiting laboratories. Containerless processing is reviewed. The development of glasses from materials which normally crystallize upon cooling, are studied.

N82-33492/1 PC **A02**/MF **A01**
Technion - Israel Inst. of Tech., Haifa. Dept. of Aeronautical Engineering.
Fatigue Behaviour of Advanced Structural Aluminium Alloy 74575-T761.
A. Buch, A. Berkovits, and D. Mushinski. Jun 81, 20p TAE-447

Fatigue data on the 7475-T761 aluminum alloy is evaluated. The calculated crack initiation lives for interference fit lugs made from this alloy were compared with lives of lugs made from conventional 7075 and 2024 alloys in the case of maneuver loading spectrum.

N82-33493/9 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
A Study of the Nature of Solid Particle Impact and Shape on the Erosion Morphology of Ductile Metals.
P. V. Rao, S. G. Young, and D. H. Buckley. Jul 82, 19p NAS 1.15:82933, E-1298, NASA-TM-82933
Presented at Microscopy of the Degradation of Mater. (Wear and Erosion), Micro 82, Intern. Symp. And Exhibition, London, 12-16 Jul. 1982; Sponsored by the Royal Microscopical Society.

Impulsive versus steady jet impingement of spherical glass bead particles on metal surfaces was studied using a gas gun facility and a commercial sand blasting apparatus. Crushed glass particles were also used in the sand blasting apparatus as well as glass beads. Comparisons of the different types of erosion patterns were made. Scanning electron microscopy, surface profilometry and energy dispersive X-ray spectroscopy analysis were used to characterize erosion patterns. The nature of the wear can be divided into cutting and deformation, each with its own characteristic features. Surface chemistry analysis indicates the possibility of complex chemical and/or mechanical interactions between erodants and target materials.

N82-33495/4 PC **A04**/MF **A01**
Charles Stark Draper Lab., Inc., Cambridge, MA.
Ultimate Intrinsic Coercivity Samarian-Cobalt Magnet. An Earth Based Feasibility Study for Space Shuttle Missions.
Final Report, 1 Oct. 1979 - 30 Jun. 1982.
D. Das, K. Kumar, R. T. Frost, and C. W. Chang. Jul 82, 59p NAS 1.26:170627, R-1571, NASA-CR-170627
Contract NAS8-33607

Techniques for the electromagnetic containerless reaction of samarium with cobalt for the formation of samarium-cobalt alloys are summarized. The effort expended to reduce and instrument the oxygen partial pressure in the reaction chamber and coolant gas system are described as well as the experiments in which these improvements were shown to be partially effective. A stainless steel glove box capable of being evacuated to low 10 to the -6th torr pressure and refilled with ultra-pure argon was built and installed. Necessary accessories to perform SmCo5 powder preparation, compaction and subsequent encapsulation of the powder inside a hot isostatic pressing cannister were designed, built, and incorporated into the chamber. All accessories were tested for proper functioning inside the chamber. Using the facility, the first batch of densified SmCo5 powder was fabricated to near total density. Analysis of the densified compacts shows that oxygen contamination during fabrication was near zero.

N82-33496/2 PC **A03**/MF **A01**
Clemson Univ., SC. Coll. of Engineering.
Hot Tensile Tests of Inconel 718.
Final Report.
24 Nov 80, 32p NAS 1.26:162089, NASA-CR-162089
Contract NAS8-33524

The physical metallurgy of near-solidus integranular cracking in Inconel 718 welds was investigated. The data, although inconclusive, suggest at least two mechanisms which might explain intergranular cracking (microfissuring) in the heat-affected zone of several high temperature alloys. One theory is based on the separation of intergranular liquid while the other involves mechanical failure of solid liguments surrounded by intergranular liquid. Both mechanisms concentrate strain in the grain boundaries resulting in low strain (1%) intergranular brittleness. The mechanisms reported might also pertain to the physical metallurgy of casting, powder metallurgy sintering and hot isostatic pressing.

N82-33683/5 PC **A04**/MF **A01**
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center.
Optical Studies of Model Binary Miscibility GAP System.
L. L. Lacy, W. K. Witherow, B. R. Facemire, and G. M. Nishioka. Jun 82, 54p NAS 1.15:82494, NASA-TM-82494

In order to develop a better understanding of separation processes in binary miscibility gap metal alloys, model transparent fluid systems were studied. The system selected was diethylene glycol-ethyl salicylate which has convenient working temperatures (288 to 350 K), low toxicity, and is relatively easy to purify. The system is well characterized with respect to its phase diagram, density, surface and interfacial tensions, viscosity and other pertinent physical properties. Studies of migration of the dispersed phase in a thermal gradient were performed using conventional photomicroscopy. Velocities of the droplets of the dispersed phase were measured and compared to calculated rates which included both Stokes and thermal components. A holographic microscopy system was used to study growth, coalescence, and particle motions. Sequential holograms allowed determination of particle size distribution changes with respect to time and temperature. Holographic microscopy is capable of recording particle densities up to 10 to the 7th power particles/cu cm and is able to resolve particles of the order of 2 to 3 microns in diameter throughout the entire volume of the test cell. The reconstructed hologram produces a wavefront that is identical to the original wavefront as it existed when the hologram was made. The reconstructed wavefront is analyzed using a variety of conventional optical methods.

N82-33732/0 PC **A03**/MF **A01**
Technion - Israel Inst. of Tech., Haifa. Dept. of Aeronautical Engineering.
The Fatigue Notch Factor Revisited.
A. Berkovits. Apr 81, 42p TAE-446

In applying the Neuber approach in the analysis of notched structures under fatigue loading, use is made of K sub f, the fatigue notch factor, sometimes called the fatigue strength reduction factor. However, use of K sub f is subject to a number of limitations which today severely curtail the successful application of the Neuber method. Clearly K sub f is a function of the theoretical stress concentration factor K sub t. It may also depend on fatigue lifetime N, strss ratio R, and temperature T. Fatigue data were reexamined in order to determine K sub f as K sub f = K sub f (material, K sub t, R, N, T) for a range of materials. Materials examined included aluminum, steel, titanium and nickel alloys. Results are presented in the form of K sub f and notch sensitivity factor q over a wide range of notch and

PATENT-4 341 843 Not available NTIS
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
Refractory Coatings.
Patent,
W. A. Brainard, and D. R. Wheeler. Filed 29 Sep 80, patented 27 Jul 82, 4p N82-30371/0, PAT-APPL-6-191 746
Supersedes PAT-APPL-6-191 746.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231, $1.00.

A thin sputtered film is discussed which exhibits improved adherence to a substrate and has improved friction and wear characteristics. Each substrate is placed directly below a titanium carbide target of a commercial radiofrequency diode apparatus in a vacuum chamber. Nitrogen is bled into the system through a nozzle resulting in a small partial pressure of about 0.5% to 2.5% during the first two minutes of deposition. The flow of nitrogen is then stopped, and the sputtering ambient is reduced to pure argon through a nozzle without interrupting the sputtering process.

PATENT-4 342 734 Not available NTIS
Department of the Navy, Washington, DC.
Method for Forming Gamma-Boron.
Patent,
Kaplesh Kumar, and Dilip K. Das. Filed 20 Jul 81, patented 3 Aug 82, 5p AD-D009 733/7, PAT-APPL-6-284 848
Supersedes PAT-APPL-6-284 848, AD-D009 580.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A plasma-spray technique using rapid temperature quenching transforms commercially available beta-rhombohedral boron in powder form into thick, dense wafers of crystalline Gamma-tetragonal boron.

PB83-106781 PC **A08**/MF **A01**
Denver Research Inst., CO.
Extraction of Chromium from Low-Grade Chromium-Bearing Ores.
Rept. for Mar 79-31 Mar 82,
Dhanesh Chandra, Charles B. Magee, and LaRose Leffler. May 82, 164p BUMINES-OFR-151-82
Grant G0284009

This report characterizes Mouat, Transvaal, and synthetic chromites in raw, roasted, and leached conditions. Special handling techniques used in examining treated materials are discussed. Thermodynamic and kinetic analyses were performed on the oxidation of chromite. Preliminary chromium extraction results showing the beneficial effect of oxygen bubbling, stirring, and tumbling are discussed. In addition, the effect

of time and temperature, particle size, charge size, additives, lattice and gangue materials, variation of sodium hydroxide-chromite ratio, magnetic separation, etc., are discussed. Preliminary solvent extraction and electrowinning studies were performed on a laboratory scale. These studies show the overall feasibility of producing chromium metal and recovering sodium. Extractions of chromium from laterites are also discussed.

PB83-107854 PC **A06**/MF **A01**
National Bureau of Standards, Washington, DC.
NBS: Materials Measurements
Annual rept. 1 Apr 81-31 Mar 82,
J. R. Manning. Jul 82, 105p NBSIR-82-2560
See also PB81-238537. Sponsored in part by National Aeronautics and Space Administration, Washington, DC.

This work is directed toward measurement of materials properties important to the design and interpretation of space processing experiments and investigations of how the space environment may offer a unique opportunity for performing improved measurements and producing materials with improved properties. This work is being carried out in three independent tasks: (1) Surface tensions and their variations with temperature and impurities; (2) Convection during unidirectional solidification; and (3) Measurement of the high temperature thermophysical properties of tungsten group liquids and solids. Emphasis in Tasks 1 and 2 is on how the reduced gravity obtained in space flight can affect convection and solidification processes. Emphasis on Task 3 is toward development of techniques for thermodynamic measurements on reactive materials, requiring levitation and containerless processing.

PB83-109801 PC **A03**/MF **A01**
Nippon Steel Corp., Tokyo.
Method for Melting Manufacture of High Purity Stainless Steel,
Hiroyuki Katayama, and Hiroyuki Kajioka. Sep 82, 41p
Trans. of Seitetsu Kenkyu (Japan) 299 p61-70 1979.

This report first summarizes the principles of refining for removal of such impurity inclusions as C, N, P, S and tramp elements (as Pb, Bi) that affect the quality of stainless steel and the conventional manufacturing method by melting. The report then introduces a novel technique in respect to a method for solving the hitherto unsolved problem of simultaneously attaining ultra-low carbon and nitrogen contents and a method for dephosphorization. In the melting manufacture of ultra-low nitrogen steel and low nitrogen steel, steel of the kind to be mass-produced can be processed to have $C + N < 100$ ppm (19 percent Cr steel) by an improved VOD method while the kind to be produced in small quantity with high purity can be processed to have $C + N < 50$ ppm (25% Cr steel) by a combination of a denitrification process and a vacuum melting process. As for dephosphorization in a stainless steel manufacturing process, the report discloses various possibilities. Particularly, it shows a prospect of attaining a dephosphorization rate between 50 and 70 percent by a reduction refining method using a CaC2 - CaF2 flux even for a mass-production process. The results of the reported studies open a way toward adequately meeting requirements for high purification of stainless steel.

PB83-111229 PC **A02**/MF **A01**
Bureau of Mines, Reno, NV. Reno Research Center.
Aluminum Extraction from Anorthosite by Leaching with Hydrochloric Acid and Fluoride.
Rept. of investigations/1982,
P. R. Bremner, J. A. Eisele, and D. J. Bauer. Aug 82, 13p BUMINES-RI-8694

The Bureau of Mines investigated a bench-scale leaching process using hydrochloric acid (HCl) and fluoride to extract aluminum from Wyoming anorthosite. HCl and fluoride-to-aluminum (F/Al) mole ratios were studied with respect to aluminum extraction for single-stage, cocurrent, and countercurrent leaching modes. Using 95 pct stoichiometric HCl and a F/Al mole ratio of 0.27, 90 pct of the aluminum was extracted by countercurrent leaching. Single-stage leaching with the same amount of acid and fluoride extracted 48 pct of the aluminum. Three fluoride sources, CaF2, Na2SiF6, and H2SiF6, were used and gave similar results on aluminum extractions.

PB83-111237 PC **A02**/MF **A01**
Bureau of Mines, Reno, NV. Reno Research Center.
Magnetic Properties of Alloys Containing Lanthanum, Cobalt, Copper, and Magnesium.
Rept. of investigations/1982,
J. W. Walkiewicz, and M. M. Wong. Aug 82, 22p BUMINES-RI-8693

One of the objectives of the Bureau of Mines is to develop substitution technology for scarce materials. In accordance with this goal, alloys containing lanthanum, cobalt, copper, and magnesium were investigated for fabrication of rare-earth-cobalt (RE-Co) permanent magnets. A complete substitution of lanthanum for samarium and a partial substitution of copper for cobalt was accomplished. Magnets of La-Co and La-Co-Cu-Mg alloys were fabricated by powder metallurgy techniques and evaluated. A maximum intrinsic coercivity of 23.2 kOe was obtained with a La-Co-Cu-Mg alloy. In comparison, maximum values of 9.3 kOe and 11.6 kOe were obtained with La-Co and La-Co-Cu alloys, respectively.

PB83-111260 PC **A02**/MF **A01**
Bureau of Mines, Rolla, MO. Rolla Research Center.
Recovery of Zinc and Sulfur from Sphalerite Concentrates by Reaction with Sulfuric Acid.
Rept. of investigations/1982,
H. H. Dewing, S. E. Lay, and A. A. Cochran. Aug 82, 22p BUMINES-RI-8690

The Bureau of Mines constructed a process research unit (PRU) to demonstrate new technology for extracting zinc from sphalerite concentrates. Up to 9 kg/hr of sphalerite (ZnS) concentrate was reacted at ambient pressure in the PRU with 80 pct sulfuric acid at 160 to 180C to produce zinc sulfate and elemental sulfur. The PRU consisted of a three-stage glass reactor system: a 4-liter premix stage in which feed was slurried with 78 to 82 pct H2SO4, a 40-liter stirred reactor, and a 150-liter settling stage in which high reaction conversions were effected and excess H2SO4 for recycle was separated from insoluble ZnSO4 and sulfur. Evolution of sulfur-containing gases was minimized by subsurface addition of acid feed slurry to the stirred reactor and by exclusion of air from the reactor to prevent the oxidation of elemental sulfur.

PB83-111286 PC **A02**/MF **A01**
Bureau of Mines, Albany, OR. Albany Research Center.
Introduction of Sulfur Into Copper Converter Slags to Produce Copper Matte.
Rept. of investigations/1982,
J. I. Paige, and W. E. Anable. Aug 82, 22p BUMINES-RI-8687

The Bureau of Mines investigated a method to totally utilize copper converter slags without recycling them back through the matte smelting furnace. The research was directed toward (1) recovering the contained copper in converting slags by producing a recyclable copper-iron matte, (2) carbothermically reducing the slags to recover the iron, and (3) producing slag wool from the depleted slags. This report deals with the reduction of three industrial converting slags, containing 2.0 to 7.3 wt-pct Cu, in an 800-kVA electric arc furnace to produce a recyclable copper-iron matte.

PB83-112565 PC **A09**/MF **A01**
National Materials Advisory Board (NRC), Washington, DC.
Tantalum and Columbium Supply and Demand Outlook.
Final rept.
Jul 82, 183p NMAB-391
Contract FPA-78-29

There are sufficient known, identified, reserves of tantalum minerals to supply the expected demand through the year 2000. However, because of the volatility of short-term demand and price, it is not certain that money will be invested by private industry to develop some of these known reserves. It is therefore possible that the supply of tantalum could be very tight in times of high demand. The U.S. capacity for processing raw material to finished products is presently adequate and could be expanded relatively easily, given enough lead time. The known reserves of columbium raw materials are very large compared with expected world demand through the year 2000. The biggest single deposit in these materials (in Brazil) is already being mined and dominates the free world supply. The USA has very limited known reserves of raw materials, and equally important, very limited processing capacity for end products such as ferrocolumbium. Therefore if imports were cut off by an emergency, the United States users would have to rely on GSA stockpile and industrial inventories.

PB83-114645 PC **A03**/MF **A01**
Central Electrochemical Research Inst., Karaikudi (India).
Corrosion Bulletin, Volume 2, Number 4, July 1982.
Bimonthly journal,
K. S. Rajagopalan. Jul 82, 41p
See also Volume 4, Number 3, PB82-244211.

Contents: A march towards better corrosion control; Corrosion problems in railways - Case Study; Process for bringing down the corrosion of magnets in contactors; Electrochemical methods of protection; Techniques for measuring corrosion rates; Corrosion rate measuring meters; In-situ spectrochemical studies-1; Corrosion research in the Defense Materials and Stores Research and Development Establishment, Kanpur; and Proceedings of get-together on corrosion inhibitors.

PB83-800573 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Tin Plating and Tin Plate. 1974-July, 1982 (Citations from the Engineering Index Data Base).
Oct 83, 247p
Supersedes PB81-807000 and PB80-808314.

Abstracts of worldwide research are presented on tin coating processes and properties. Studies on baths, additives, and electrolytes are included. Topics covered are corrosion, soldering, forming, quality control, and performance of tin plate. The majority of articles described are containers or circuit boards. (This updated bibliography contains 240 citations, 8 of which are new entries to the previous edition.)

PB83-854190 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Zone Refining. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 101p
Supersedes PB81-853814.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning state of the art technology of zone refining. Application to the removal of trace impurities from materials for use in processes which require extremely high purity materials. Zone refining equipment, processes and performance are discussed. (This updated bibliography contains 93 citations, 24 of which are new entries to the previous edition.)

PB83-854299 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Stray Current Corrosion: Effects On Underground Pipes And Cables. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 89p
Supersedes PB81-881146.

This bibliography contains citations concerning the phenomena of stray current corrosion in terms of underground conductivity and its contribution to accelerated corrosion. Topics include corrosion phenomena associated with electric railways, underground cables and reinforced concrete structures. The use of both anodic and cathodic protection systems is included. (This updated bibliography contains 138 citations, 11 of which are new entries to the previous edition.)

PB83-854497 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Electrodeposition of Tin Base Alloys. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 64p
Supersedes PB81-857328.

This bibliography contains citations concerning electrodeposition of tin base alloys. Plating bath compositions, operating parameters, and properties of the electrodeposited coatings as a function of the metal substrate are among the topics discussed. Applica-

tions in dentistry, printed circuit board manufacturing, food processing equipment, aircraft refueling lines, textile processing equipment and the automotive industry are described. (This updated bibliography contains 84 citations, 14 of which are new entries to the previous edition.)

PB83-854853 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Aluminum-Silver Alloys:Physical and Metallurgical Properties. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 76p
Supersedes PB81-860942.

This bibliography contains citations concerning the physical properties of aluminum-silver alloys. Particular emphasis is placed on metallurgical properties such as precipitation and structural hardening. Other properties of these alloys include non-homogenicity and deformation as well as aging. The superconductivity of the alloy is discussed, as is stress corrosion and stress corrosion cracking. (This updated bibliography contains 98 citations, 21 of which are new entries to the previous edition.)

PB83-854802 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Silver-Copper Alloys: Surface and Optical Properties. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 95p
Supersedes PB82-862301.

This bibliography contains citations concerning the surface and optical properties of silver-copper alloys. Applications include thin film devices, electrical contacts, bimetallic junctions, dental and brazing alloys, and directionally solidified composite materials. Phase relationships for these alloys are also presented. (This updated bibliography contains 112 citations, 18 of which are new entries to the previous edition.)

PB83-854828 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Aluminum-Manganese Alloys. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 112p
Supersedes PB82-860339.

This bibliography contains citations concerning the mechanical, electrical, and magnetic properties of aluminum-manganese alloys. The effects of phase transformations and structural changes due to heat treatment on the above properties are emphasized. The role of impurities and minor alloying components on alloy structure and electrical resistivity is also included. (This updated bibliography contains 151 citations, 14 of which are new entries to the previous edition.)

PB83-854844 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Coal Gasification Technology: Corrosion and Erosion Protection. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 192p
Supersedes PB82-857749.

This bibliography contains citations concerning the factors contributing to corrosion and erosion of materials in coal gasification invironments. Materials selection for corrosion protection is also presented in terms of the physical and mechanical properties. Emphasis is placed on sulfidation and oxidation resistance of refractory metals, particularly the nickel base superalloys. (This updated bibliography contains 199 citations, 11 of which are new entries to the previous edition.)

PB83-854893 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Metals Recovery From Wastes. June, 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for Jun 76-Nov 82.
Nov 82, 364p
Supersedes PB82-859604.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography cites reports relating to techniques and technology for the recovery and recycling or reuse of ferrous and nonferrous metals. The metals are from various kinds of industrial and municipal wastes. (This updated bibliography contains 355 citations, 263 of which are new entries to the previous edition.)

11G. Miscellaneous Materials

PB83-854216 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Ferrofluids. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 211p
Supersedes PB82-856774.

This bibliography contains citations concerning the properties and applications of ferromagnetic liquids. Theoretical models and experimental studies of ferrofluids in external magnetic fields are considered. Ferrofluids in loudspeakers, liquid seals, liquid magnetic bubbles, energy conversion, and other industrial and scientific applications are discussed. (This updated bibliography contains 205 citations, 70 of which are new entries to the previous edition.)

PB83-854224 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Ferrofluids. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 103p
Supersedes PB82-857038.

This bibliography contains citations concerning the properties, preparation, applications, and phenomenological theory of ferrofluids. The behavior of ferrofludis in uniform, rotating, and non-homogeneous magnetic fields is discussed. Progress in the development of new ferromagnetic liquids is included. (This updated bibliography contains 105 citations, 20 of which are new entries to the previous edition.)

11H. Oils, Lubricants, and Hydraulic Fluids

PB83-126516 PC **A12**/MF **A01**
Indian Inst. of Tech., Bombay.
Proceedings of the Second National Industrial Tribology Conference, Bombay-1976,
R. C. Chaturvedi, and R. A. Rao. c1978, 255p

With widespread acceptance of the multidisciplinary area of tribology, the need for a forum for interaction among research workers and practicing engineers in this area was strongly felt, and thus this conference was organized. This volume contains 38 papers presented in the conference. These papers have been grouped under 5 main sections: Gears and I.C. Engines; Friction and Wear of Surfaces; Metal Working; Bearings (Design, Stability and Performance); and Lubrication Practice and Maintenance Management. The discussions are also included in the proceedings.

11I. Plastics

DE82009561 MF **A01**
Mississippi Univ., University. Dept. of Chemistry.
Radiation Chemistry of Plastic Crystals. Final Report.
T. J. Klingen. 30 Jun 79, 26p DOE/ER/03781-15, ORO-3781-15
Contract AS05-76ER03781
Portions of document are illegible.
Available in microfiche only.

The primary purpose of this report is to summarize the research done under this contract over the past twelve years. Since it is manifestly impossible to provide all the details involved in this work in this report only the primary results of these studies are discussed. The detailed radiolytic mechanisms and kinetics, as well as other detailed information on the systems studied have previously been reported in the annual reports, ORO-3781-1 through 14 and in the journal articles listed in the Contract Publications section of this report. The initial purpose of this work was to study the gamma-ray induced polymerization of organo-substituted carboranes in the solid state. With time this purpose changed to understanding in detail the effects plastic crystallinity had on the overall radiolysis of materials in this type of mesomorphic state. This work included the effects of phase, charge transfer, organic substituent and the ability of the carboranes to act as electron scavengers. For clarity of presentation, the work in the various areas which was performed under this contract is reported in four separate sections: plastic crystallinity, radiation chemistry, electrooptical properties, and thermal oligomerization. (ERA citation 07:047594)

N82-33524/1 PC **A04**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Materials Science and Engineering.
Rapid Quenching Effects in Pvc Films.
H. D. Lee, J. F. Mandell, and F. J. Mcgarry. Oct 81, 73p NAS 1.26:169350, MIT-R81-5, NASA-CR-169350
Sponsored by NASA.

Using a specially constructed microbalance for hydrostatic weighing, density changes in PVC thin films (with no additives, 30-100 micrometers thick), due to rapid quenching (approximately 300 C/sec) through the glass transition temperature, have been observed. The more severe the quench, the greater is the free volume content. Isobaric volume recovery of PVC has also been studied by volume dilatometry. Both show aging of relaxing molecular rearrangements takes place as a linear function of logarithmic aging time at room temperature. Distribution of retardation times and Primak's distributed activation energy spectra have been applied to the volume recovery data. The concomitant changes in mechanical properties of PVC after quenching have been monitored by tensile creep and stress-strain to failure. All reflect the presence of excess free volume content, due to rapid quenching.

N82-33530/8 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Larc-Tpi: A Multi-Purpose Thermoplastic Polyimide.
A. K. St.Clair, and T. L. St.Clair. Jun 82, 25p NAS 1.15:84516, NASA-TM-84516
Presented at the 26TH Natl. Sampe Symp., Los Angeles, Apr. 1981.

A linear thermoplastic polyimide, LARC-TPI, was characterized and developed for a variety of high temperature applications. In its fully imidized form, this material can be used as an adhesive for bonding metals such as titanium, aluminum, copper, brass, and stainless steel. LARC-TPI was evaluated as a thermoplastic for bonding large pieces of polyimide film to produce flexible, 100 void-free laminates for flexible circuit applications. The development of LARC-TPI as a potential molding powder, composite matrix resin, high temperature film and fiber is also discussed.

PAT-APPL-6-366 954 PC **A02**/MF **A01**
Department of the Navy, Washington, DC.
Method of Recovering a Copolymer.
Patent Application,
Bernard E. Douda. Filed 9 Apr 82, 11p AD-D009 748/5
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

The present invention relates to a method for recovering a copolymer used as a binder in pyrotechnic device and, more particularly, to a method for recovering

Viton-A, which is a tradename for a copolymer of vinylidene fluoride and hexafluoropropylene. The Viton-A is first dissolved in N-methyl-2-pyrrolidone which has a flash point of 95 degrees C. After Viton-A is dissolved, a flocculant, such as water, is added to the solution and the Viton-A is precipitated and can readily be removed from the liquid. The flocculant and N-methyl-2-pyrrolidone are then separated by fractional distillation. It is therefore a general object of the present invention to provide an improved method for recovering Viton-A from pyrotechnic compositions. Other objects, advantages and novel features of the present invention will become apparent from the following detailed description of the invention.

PB83-124461 PC **A05**/MF **A01**
Agfa-Gevaert A.G., Munich (Germany, F.R.).
Fast Lenses Made of Plastic.
Final rept.,
O. Renner. Nov 82, 82p BMFT-FB-T-80-104
Trans. of mono. Lichtstarke Objektive aus Kunststoff, n.p., 91p Oct 80. See also N81-24920.

The investigation involved a study of the fundamental physical and technological requirements for the development and eventual commercial fabrication of fast lenses made of various plastics. To test the results a specimen lens 1:20/26 was produced and examined in detail. Under laboratory conditions at least, it appears feasible to produce good quality lenses from plastic materials. Apart from a more precise determination of the relevant material parameters, large scale manufacture will necessitate improvement of the moulding and tooling techniques used. The production of aspherical surfaces will be of especial importance in this context.

PB83-853937 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Polyvinylidene Fluoride: Structure and Degradation. 1976-November, 1982 (Citations from the Rubber and Plastics Research Association Data Base).
Rept. for 1976-Nov 82.
Nov 82, 129p

This bibliography contains citations concerning the structural properties, molecular configuration and degradation of polyvinylidene fluoride and other vinylidene fluoride polymers and copolymers. Crystal structure; mechanical properties; molecular conformation; and optical, x-ray, neutron, radiation and brillouin scattering studies are presented. Radiation, thermooxidative, fatigue, and biological degradation and deformation are discussed relative to various applications. (Contains 122 citations fully indexed and including a title list.)

PB83-853945 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Polyvinylidene Fluoride: Reinforcers and Processing. 1977-November, 1982 (Citations from the Rubber and Plastics Research Association Data Base).
Rept. for 1977-Nov 82.
Nov 82, 86p

This bibliography contains citations concerning reinforcers, modifiers, fillers and processing technology of polyvinylidene fluoride and other vinylidene fluoride polymers. Injection molding and blow molding predominate. Carbon, graphite and glass-fibers are discussed relative to reinforcers, fillers and modifiers of PVDF. (Contains 81 citations fully indexed and including a title list.)

PB83-854091 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Melt Flow Indices For Thermoplastics And Elastomers. 1973-November, 1982 (Citations from the Rubber and Plastics Research Association Data Base).
Rept. for 1973-Nov 82.
Nov 82, 91p
Supersedes PB81-869620.

This bibliography contains citations concerning relationships among flow indices and shear rates, shear stresses, viscosities and temperature shift factors of various polymer blends. A wide variety of polymers and blended polymer melts used in modern applications are investigated. (This updated bibliography contains 89 citations, 24 of which are new entries to the previous edition.)

PB83-854109 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Injection Molding of Acrylonitrile Butadiene Styrenes. January, 1973-November, 1982 (Citations from the Rubber and Plastics Research Association Data Base).
Rept. for Jan 73-Nov 82.
Nov 82, 123p
Supersedes PB81-868069.

This bibliography contains citations concerning injection molding, mold design and molding techniques of ABS plastics. Information on foams, colorants, properties, and some marketing aspects of ABS plastics are included. (This updated bibliography contains 127 citations, 38 of which are new entries to the previous edition.)

PB83-854117 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Amorphous Polymeric Films. 1973-November, 1982 (Citations from the Rubber and Plastics Research Association Data Base).
Rept. for 1973-Nov 82.
Nov 82, 107p

This bibliography contains citations concerning molecular structure and physical properties of amorphous polymeric films. Amorphous polyethylene, polycarbonate, and polyethylene terephthalate films are discussed. Chemical resistance and biodegradation of films are considered. (Contains 95 citations fully indexed and including a title list.)

PB83-854323 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Nondestructive Testing of Plastics. 1972-November, 1982 (Citations from the International Aerospace Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 234p
Supersedes PB82-860008.Prepared in cooperation with the National Aeronautics and Space Administration, Washington, DC.

This bibliography contains citations concerning techniques and technology for the nondestructive testing or evaluation of various kinds of plastic stock and fabricated plastic products or objects for the detection of flaws or defects which affect their properties and behavior. Special emphasis is placed upon plastics in aerospace applications. (This updated bibliography contains 235 citations, 69 of which are new entries to the previous edition.)

PB83-855015 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Electrically Conductive Plastics. 1977-November, 1982 (Citations from the E:.gineering Index Data Base).
Rept. for 1977-Nov 82.
Nov 82, 331p
Supersedes PB82-857228.

This bibliography contains citations concerning the preparation of electrically conductive plastics. Developments in conductive metal fiber impregnating of molded plastics is considered relevant to molding processes, electrical conductivity, metalloplastics, electromagnetic interference shielding capability, and applications of the light weight polymeric conductors. Extensive test procedures are included which consider the equipment, methods of testing, and results to determine the shielding effectiveness of common electrically conductive polymeric resins. Thermosetting as well as thermoplastic resins are examined. (This updated bibliography contains 320 citations, 86 of which are new entries to the previous edition.)

11J. Rubbers

PB83-854141 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Vulcanization of Chloroprene: Mechanical Properties and Chemical Resistance. 1973-November, 1982 (Citations from the Rubber and Plastics Research Association Data Base).
Rept. for 1973-Nov 82.
Nov 82, 95p
Supersedes PB81-866865.

This bibliography contains citations concerning the vulcanization of chloroprene rubber in terms of the resulting mechanical properties as well as the effects of the process on chemical and heat resistance. Crystallization and crosslinking as a result of vulcanization are also discussed. (This updated bibliography contains 98 citations, 13 of which are new entries to the previous edition.)

11L. Wood and Paper Products

PB83-124834 PC **A02**/MF **A01**
Northeastern Forest Experiment Station, Broomall, PA.
The Effect of Sawbolt Length on the Yield of Pallet Materials from Small-Diameter Hardwood Trees.
Final rept.,
E. Paul Craft. 1982, 10p FSRS-NE-499, NEFES/83-19

From overstocked poletimber thinnings, 52 sample trees were bucked into 8-foot lengths, and 49 trees were bucked into 10-foot lengths. These lengths were sawed into pallet parts and pallet cants. The sawed yield from 8- and 10-foot lengths is compared to the predicted yield from sawing 4- and 6-foot bolts from the same trees.

PB83-128090 PC **A02**/MF **A01**
Northeastern Forest Experiment Station, Broomall, PA.
Rough-Part Sizes Needed from Lumber for Manufacturing Furniture and Kitchen Cabinets.
Forest Service research paper (Final),
Philip A. Araman. 1982, 12p FSRP-NE-503, NEFES/83-21

This report summarizes the results from a recent survey of the rough-part sizes needed from lumber for manufacturing furniture and kitchen cabinets. Twenty furniture and twelve cabinet companies participated in the survey. Lumber thicknesses needed and rough-part qualities desired are presented along with distributions describing the required rough part dimensions.

PB83-854133 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Paper Industry: Technology Transfer To Developing Countries. 1976-November, 1982 (Citations from the Paper and Board, Printing, and Packaging Industries Research Associations Data Base).
Rept. for 1976-Nov 82.
Nov 82, 153p
Supersedes PB81-872855.

The bibliography contains citations concerning transfer of technology from the pulp and paper industry to developing countries. Topics discussed include state of the art technology, types and methods of technology transfer, and uses for paper products. Transfers by equipment suppliers, manufacturers, and consultants are included. (This updated bibliography contains 101 citations, 11 of which are new entries to the previous edition.)

PB83-854604 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Water Resistance Of Particle Boards. 1972-November, 1982 (Citations from the Institute of Paper Chemistry Data Base).
Rept. for 1972-Nov 82.
Nov 82, 275p
Supersedes PB82-854662.

This bibliography contains citations concerning weather, water, moisture, and biological resistance of such particle boards as hardboard, decorator panels, waferboard, fiberboard, and bark board. Processes of particle board manufacture relevant to various woody and non-woody fibers of temperate zone and tropical

origin, polymeric coatings and binders, and curing are discussed with reference to water resistant qualities. Testing guidelines, applications and numerous foreign and domestic patents are included. (This updated bibliography contains 228 citations, 46 of which are new entries to the previous edition.)

12.

MATHEMATICAL SCIENCES

12A. Mathematics and Statistics

PB83-108969 CP **T03**
Bureau of Economic Analysis, Washington, D. C.
Machine Algorithm to Manipulate Matrices.
Software.
12 Dec 73, mag tape FSWEC-77/0087
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This program is designed to perform various operations on matrices of any size to 465 by 465. These operations include matrix addition, subtraction, multiplication, and inversion; and transposition, multiplication, or division of rows and columns of a matrix by specified constants; and term-by-term multiplication or division of one matrix by another of the same size. ...Software Description: The program is written in the FORTRAN programming language for implementation on a UNIVAC 1108 computer using the EXEC 8 operating system. Computer memory requirement is 50K.

PB83-116244 PC **A04**/MF **A01**
Technische Hogeschool, Delft (Netherlands). Onderafdeling der Wiskunde en Informatica.
Prime Systems in Ergodic Theory and Topological Dynamics,
Andres del Junco. 1982, 52p 82-23

Contents: Background in ergodic theory and topological dynamics; Homomorphisms, factors and prime systems; The proximal orbit dense (P.O.D.) property; Chacon's example, topological version; Joinings and minimal self-joinings of order 2; Minimal self-joinings.

PB83-116301 PC **A03**/MF **A01**
Groningen Rijksuniversiteit (Netherlands). Mathematisch Inst.
Schemes of Linear Configurations in Projective Plane,
Wim H. Hesselink. Apr 82, 46p ZW-8202

By a configuration C we mean a triple (C1,C2,Co) where C1 and C2 are finite sets and Co is a subset of the product C1xC2. A drawing S of C in the projective plane P2 consists of a family of points S(x), x epsilon C1, and a family of lines S(y), y epsilon C2, such that a point S(x) is incident with a line S(y) if and only if (x,y) epsilon Co. The set of drawings S of a configuration C will be converted into a scheme in the sense of abstract algebraic geometry. This scheme is called Dr(C). We shall introduce certain morphisms of schemes which are called free. Let it here suffice to say that free morphisms are smooth and surjective with connected rational fibers. The main result is the following theorem: If X is an affine (or projective) scheme of finite type over Z, then there is a configuration C with a free morphism Dr(C) (arrow) X.

PB83-118455 PC **A03**/MF **A01**
Rochester Univ., NY. Dept. of Statistics.
Evaluation of the Power of Re-randomization Tests, with Application to Weather Modification Experiments.
Technical rept. (Final),
K. Ruben Gabriel, and Chin-Fei Hsu. Jun 81, 33p
UR/STAT-81/11
Contract NSF-ATM79-05536
Prepared in cooperation with Illinois State Survey, Urbana.

Computations of power of re-randomization tests by exact methods are known to be computationally exhorbitant. The authors introduce a much cheaper 'naive' method of evaluating power and show - both by simulation and analytically for a special case - that it very mildly overestimates true power. They further derive a normal approximation to re-randomization distributions of linear statistics and illustrate its closeness to the true distributions. This yields analytical formulas for calculating power approximately at negligible computational cost. The proposed methods therefore eliminate the previously prohibitive cost of calculating power for re-randomization tests and make it practical to evaluate the sample sizes needed for a randomized experiment to be analyzed by re-randomization. Its application to weather modification experiments is illustrated.

PB83-126615 PC **A05**/MF **A01**
Stanford Univ., CA. Dept. of Computer Science.
Computing the Controllability/Observability Decomposition of a Linear Time-Invariant Dynamic System, a Numerical Approach,
Daniel Lucius Boley. c1981, 84p STAN-CS-81-860
Contract DOE-EY-76-S-03-0326, Grant NSF-DCR75-13497
Sponsored in part by Grants AFOSR-79-0094 and DAHC04-75-G0185.

Various numerical properties involved in computing the complete Controllability-Observability (Kalman) Decomposition for a linear time-invariant dynamic system, of the form (x dot) = Ax + Bu, y = Cx, are examined, where A, B, C are matrices (A square), and u, x, y are vector functions of time. In particular, the numerical stability, the cost, and the particular advantages of several algorithms are considered. Several ways to measure ill-conditioning in the data are examined.

12B. Operations Research

PB83-116277 PC **A03**/MF **A01**
Technische Hogeschool, Delft (Netherlands). Onderafdeling der Wiskunde en Informatica.
Performance Evaluation of Non-Linear Optimization Methods Via Pairwise Comparison and Fuzzy Numbers,
F. A. Lootsma. 1982, 34p 82-25

In this paper the author extends the deterministic performance evaluation of non-linear optimization methods. A pairwise comparison is done using fuzzy estimates of the performance ratios to obtain fuzzy final scores of the methods under consideration. The key instrument is the concept of fuzzy numbers with triangular membership functions. The algebraic operations on them are simple extensions of the operations on real numbers; they are exact in the parameters (lower, modal, and upper values), not necessarily exact in the shape of the membership function. The fuzzy performance evaluation is illustrated by the ranking and rating of well-known non-linear optimization methods, using the results of some recent test batteries.

PB83-116285 PC **A02**/MF **A01**
Technische Hogeschool, Delft (Netherlands). Onderafdeling der Wiskunde en Informatica.
A Fuzzy Extension of Saaty's Priority Theory,
P. J. M. van Laarhoven, and W. Pedrycz. 1982, 25p 82-21

In this paper, the authors present a method for handling a decision problem, where one has to make a choice among a number of alternatives under conflicting decision criteria. First, they make some remarks on Saaty's priority theory, which provides a well-known method for ranking and rating of the alternatives in question. As the method is a fuzzy version of Saaty's theory, they pay some attention to fuzzy numbers and operations on them. Next, they present their method. Finally, an illustrative example is dealt with and some concluding remarks are made.

13.

MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING

13A. Air Conditioning, Heating, Lighting, and Ventilating

DE82005682 PC **A02**/MF **A01**
ICF, Inc., Washington, DC.
Economics of Geothermal Direct-Heat Applications.
W. F. Hederman, Jr., and L. A. Cohen. Oct 81, 4p
EGG-M-05481-C, CONF-811015-22
Contracts AC07-80ID12099, AC07-76ID01570
Geothermal Resources Council annual meeting, Houston, TX, USA, 25 Oct 1981, Portions of document are illegible.

Cost and production data from five commercial-scale geothermal direct-heat application projects are reviewed. Unit costs of geothermal energy under a variety of assumptions about production levels, costs, tax treatment, financial structure, and cost of capital are calculated and compared to orices of conventional fuels which would be displaced over the life of a geothermal project. Geothermal energy is found to be less costly than distillate fuel oil for all cases examined and cheaper than natural gas in many cases. (ERA citation 07:056671)

DE82007466 MF **A01**
Solar Energy Research Inst., Golden, CO.
Solar Thermal Energy Systems Industrial Applications Assessment Review: Presentation Summaries.
Dec 81, 484p SERI/CP-633-1271, CONF-8103114-Sum.
Contract AC02-77CH00178
Solar thermal energy systems industrial applications assessment review, Washington, DC, USA, 24 Mar 1981.
Best available copy from document source. Available in microfiche only.

Eighteen presentation summaries consisting mainly of view-graphs and including some brief verbal explanation are compiled. They cover: solar thermal energy applications assessment and planning; industrial sector analysis in the industrial applications branch of SERI; regional assessment studies, an evaluation of solar thermal systems for thermal applications, central receiver market studies; assessment of solar central receiver technology, markets, and industry; industrial solar thermal market assessment; solar industrial process heat market for central receiver technology; solar total energy modularity; parabolic dishes; solar industrial process heat case studies market evaluation; economic potential of solar thermal energy to provide industrial process heat in the US; industrial solar process heat program at the Northeast Solar Energy Center; the Gas Research Institute Program projections of industrial end uses to assist evaluation of solar thermal options; conventional approaches to industrial marketing; solar energy incentives and buyer behavior; and financial aspects for commercialization of central receivers. (ERA citation 07:042994)

DE82008646 MF **A01**
Alpha Glass, Inc., El Segundo, CA.

Brayton-Cycle Heat-Recovery System Characterization Program. Component Test Plan.
19 Jan 81, 12p DOE/CS/40008-T11
Contract AC03-77CS40008
Portions of document are illegible.
Best available copy from document source. Available in microfiche only.

The critical components of the glass furnace subject to corrosion/erosion are: the valve gate and the valve seat bottom and sides which can also be subject to warpage causing subsequent leakage and the furnace flues (or ducting). The Brayton System will be added to the glass furnace just downstream of the reversal valve. Hence, the inlet air to the flues will no longer be at ambient temperature but at a higher level between 800 to 1000 exp 0 F. Also, the exhaust gas for the Brayton System is required to be 1500 to 1600 exp 0 F at these locations. Thus, the flues and valve components will be exposed to a much higher average temperature operating with the Brayton System. The possibility of cracking of the refractory linings and warpage and scaling of the switching valve, with consequent leakage to the exhaust stream should be avoided or decreased as much as feasible because of its effect of lowering the turbine inlet temperature and thus the total system value. On the inlet side, leakage dilutes the heat added to the air (which is preheated) and reduces the expected fuel savings. Assessment of such effects and determination of potential solutions and/or improvements in these areas is the purpose of this component system analysis and testing. The materials, mechanics and operations of the two areas of concern and the program for testing alternative approaches including test hardware, objectives, conditions and locations are described. (ERA citation 07:047240)

DE82008663 PC **A05**/MF **A01**
Scottsdale, AZ.
City of Scottsdale Courts Building Solar Space-Conditioning Project. Final Technical Report.
Jun 81, 85p DOE/CS/32166-T1
Contract FC03-78CS32166
Portions of document are illegible.

The Maricopa County Courts Building is an existing 6800 square foot, single story structure housing offices and courtroom space. The solar system is sized to provide 65% of the annual cooling load and 100% of the heating load. An adjacent city swimming pool is connected to the system as a heat sink to provide thermal overload protection. A 25-ton absorption chiller is piped in series with the existing 25-ton air-cooled packaged chiller. Heating will be by standard hot water duct coils mounted upstream of the existing electric heaters. Freeze control is by recirculation under normal conditions, and by flush through in the event of power failure. The control sequence is given and the acceptance tests are described. Problems and solutions in constructing the system and lessons learned are discussed. Appended are the solar system schematic and as-built drawings, as well as photographs of the completed project. (ERA citation 07:056587)

DE82012370 PC **A11**/MF **A01**
Department of Energy, Washington, DC. Assistant Secretary for Conservation and Renewable Energy.
Proceedings of the DOE Heat-Pump Contractors Program Integration Meeting.
Mar 82, 241p CONF-810672-
DOE heat pump contractors' program integration meeting, McLean, VA, USA, 2 Jun 1981, Portions of document are illegible.
Microfiche only after original copies are exhausted.

Separate abstracts were prepared for 28 papers in these proceedings. Also included are 24 other papers previously abstracted for EDB. (ERA citation 07:054219)

PATENT-4 339 930 Not available NTIS
Department of the Navy, Washington, DC.
Control System for Solar-Assisted Heat Pump System.
Patent,
Richard E. Kirts. Filed 3 Jul 80, patented 20 Jul 82, 9p AD-D009 732/9, PAT-APPL-6-165 817
Supersedes PAT-APPL-6-165 817, AD-D007 417.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A control system for a solar-assisted heating and cooling system including a solar collector system, a thermal storage system, a water-to-air heat pump, a water-to-air heat exchanger, a domestic water heater, and a cooling tower. The preferred embodiment of the controller of the present invention includes a first temperature sensing means for sensing the temperature of the collector fluid at the outlet of the solar collector system, a second temperature sensing means for sensing the temperature of the storage fluid at the thermal storage system, and a third temperature sensing means for sensing the temperature of the inlet water to the domestic water heater. The controller compares the temperature of the thermal storage fluid with three control temperatures which define four temperature ranges. The controller, based on the temperature range in which the temperature of the thermal storage fluid falls, whether the system is in the heating or cooling mode, and whether there is a demand for heating or cooling automatically controls the thermal storage system, the heat pump, the heat exchanger, the cooling tower, and the connections therebetween to provide increased efficiency.

PB83-108993 CP **T02**
National Bureau of Standards, Washington, D. C. Center for Building Technolcgy.
Pipe Heat Transfer Calculation.
Software.
3 Dec 73, mag tape FSWEC-77/0097
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 tract recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This is a group of computer programs to determine heat transfer of multiple pipe systems as well as to evaluate economics of underground heat distribution systems. ...Software Description: The system is written in the FORTRAN V programming language for implementation on a UNIVAC 1108 or GE 400 computer using the EXEC 2 & 8 or GSA operating system. The computer memory requirement is 32K.

PB83-109843 PC **A05**/MF **A01**
American Gas Association Labs., Cleveland, OH.
Commercial Cooking Equipment Improvement. Volume III: Open Top, Hot Top and Fry Top Ranges.
Final rept. Jan 81-Apr 82,
R. L. Himmel. May 82, 80p GRI-80/0079.3
See also PB82-141086.

This report describes the efforts of a project aimed at improving the thermal efficiency of gas-fired commercial cooking equipment, specifically heavy duty and restaurant range open top sections and heavy duty hot top and fry top sections. The work was to investigate the primary design factors that determine the efficiency levels of contemporary units while maintaining good combustion and desired appliance performance. This investigation was performed in an individual stepwise fashion and demonstrated the relative merit of each of the improvement factors. The improvement factors were to be of a minor design change requiring relatively little manufacturer retooling as there was a general belief that current systems might have the potential for significant improvement.

PB83-111641 PC **A06**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
Abstracted Reports and Articles of the HUD Modular Integrated Utility Systems (MIUS) Program, Supplement 1.
Special pub.,
M. H. Nimmo, and B. Reznek. Aug 82, 123p NBS-SP-489-SUPL-1
Library of Congress catalog card no. 82-600571. Sponsored in part by Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research. See also PB-271 526.

This document provides an additional listing of reports and articles relating to the HUD-MIUS Program. Reports published and selected since the issuance of NBS SP-489 are listed. Also included, for the sake of completeness, are some earlier reports which had not been included in the original NBS SP-489. Both NBS SP-489 and this document are required for full coverage. The entry for each report contains an abstract and other pertinent information, including procurement sources and procedures. Reports are grouped by four general subject categories: Program/Concept Description; Systems Analysis; Technology Evaluation; and Hardware Evaluation and Demonstration. The reports are further classified into three publication/availability categories: government publications (Published Reports); non-government publications and articles (Outside Publications); and 'informal' reports and data (Open-File Reports). An overall subject index has been included which covers both NBS SP-489 and this document.

PB83-115303 PC **E06**/MF **E06**
Commission of the European Communities, Luxembourg.
The Irish Solar Pilot Test Facility: Design, Construction and First Period of Operation.
Final rept.,
I. J. Cowan. c1982, 103p EUR-7696-EN
Portions of this document are not fully legible.
Customers in the European Community countries should apply to the Office for Official Publications of the European Communities, B.P. 1003, Luxembourg.

The results of phase 1 of the Irish solar pilot test facility are presented. The work described comprises: (a) the construction of a pilot test facility consisting of two systems, a standard reference system built to the same specification in each of the participating countries, and (b) a national sub-system designed independently by each participant. These two systems, described respectively as Solar System One and Solar System Two, are discussed in relation to the mechanical, measurement and control principles governing them, the allied construction and other problems. The results of preliminary trials on Solar System One are given, the trials being composed of tests performed on the various circuits of the system, and hourly data on magnetic tape sent to the co-ordinator for a specific period.

PB83-117374 PC **A06**/MF **A01**
Lennox Industries, Inc., Carrollton, TX.
Pulse Combustion Gas-Fired Furnaces, January 1980-May 1980, Field Test.
Final rept.,
R. Wilson, and C. W. Adams. 16 Aug 82, 122p C82-3, GRI-80/0164
Contract GRI-5014-341-0292

To determine the operating characteristics of pulse combustion furnaces in actual homes. The field tests were made to demonstrate that applying the pulse combustion/condensing principles to residential gas-fired warm air furnaces will result in reduced fuel consumption as compared to furnaces of conventional design, and with noise levels acceptable to the user. A secondary purpose was to determine what types of application problems would be encountered in a real time environment.

PB83-128520 PC **A13**/MF **A01**
Indian Inst. of Tech., Bombay.
National Symposium on Refrigeration and Air-Conditioning (6th) Held at India Institute of Technology, Bombay on December 12-13, 1978.
1978, 286p
Portions of this document are not fully legible.

In a tropical country like India, the importance of refrigeration and air conditioning for food preservation and human comfort is well known. Due to lack of proper cold storage and refrigerated transport facilities, a large percentage of food is spoiled. With proper attention to research and development in this field, wastage of food can be cut down. With this view, the main theme of this symposium was 'Refrigerated Storage and Transport'. This volume contains 34 papers presented in the symposium. The main topics covered are: Refrigerated Storage and Transport; Thermodynamics and Heat Transfer; Equipment; and Air conditioning.

PB83-855155 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Induction Heating. June, 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for Jun 70-Nov 82.
Nov 82, 249p
Supersedes PB82-863275.

This bibliography contains citations concerning the principles, characteristics, techniques, and applications of induction heating systems, and design and manufacturing of its components. Applications cover heat treatment, metal working, melting, and bonding in

industry. Included also are effects of induction heating on physical properties of materials treated. (This updated bibliography contains 290 citations, 46 of which are new entries to the previous edition.)

13B. Civil Engineering

DE82005501 PC **A02**/MF **A01**
Brookhaven National Lab., Upton, NY.
National Estimates of Residential Firewood and Air Pollution Emissions.
F. W. Lipfert, and J. L. Dungan. 1981, 10p BNL-30367, CONF-811212-9
Contract AC02-76CH00016
International conference on alternative energy sources, Miami Beach, FL, USA, 14 Dec 1981.

Estimates are presented for the distribution and quantity of recent (1978-1979) use of residential firewood in the United States, based on a correlation of survey data from 64 New England counties. The available survey data from other states are in agreement with the relationship derived from New England; no constraints due to wood supply are apparent. This relationship indicates that the highest density of wood usage (Kg/ha) occurs in urban areas; thus exacerbation of urban air quality problems is a matter of some concern. The data presentation used here gives an upper limit to this density of firewood usage which will allow realistic estimates of air quality impact to be made. (ERA citation 07:044632)

DE82006198 MF **A01**
Massachusetts Inst. of Tech., Cambridge.
Scale Effects in Liquefied Fuel Vapor Dispersion. Final Technical Report.
J. A. Fay, and D. Rack. Dec 81, 100p DOE/EP-0032
Contract AS02-77EV04204
Microfiche copies only.

Vapor clouds formed by rapid boiling of liquefied gas spilled on land or water exhibit unusual dispersive behavior caused by physical phenomena which are not yet adequately understood. To help elucidate these phenomena this study proposes a method for correlating observations made in disparate field and wind tunnel experiments and, using this methodology, compares all available test data. The bases of the method are a nondimensionalizing of the principle experimental observables and test parameters through use of atmospheric flow parameters and initial cloud properties and the use of a simple entrainment model to simplify the expected relationships among the observed quantities. Peak cloud concentration, travel time and distance are the observables used in this analysis. A good correlation was found in tests of isothermal clouds on level surfaces, but many tests are required to establish average cloud behavior. In tests on sloping ground, cloud drift time and distance were altered but the dilution rate was unaffected. In contrast with isothermal tests, LNG field tests show markedly increased rates of dilution of cloud vapor. It is suggested that this enhanced entrainment effect may be caused by the destabilizing influence of heat transfer to the bottom of the cloud and water vapor condensation along the top, and would probably be absent in vapor clouds of higher molecular weight gases. This model-based correlation of LNG cloud dispersion was used to predict the maximum distance of travel of flammable LNG vapor clouds over land and water for a range of meteorological conditions. (ERA citation 07:054996)

DE82008005 MF **A01**
Galaxy, Inc., Washington, DC.
Survey of European Technology Developments of SO/sub X//NO/sub X/ Flue Gas Clean Up for Coal-Fired Boilers, Also Free Piston Stirling Engines and Coal Tar Burning Diesel Engines.
Oct 80, 104p DOE/SF/10538-T12-V.1
Contract AC03-79SF10538
Portions of document are illegible.
Available in microfiche only.

In an effort to identify advanced RD and D projects as candidates for joint ventures and/or introduction to the US, European technology developments in the area of flue gas cleanup were surveyed. This survey covers both wet and dry scrubbers for coal-fired boilers and includes advanced systems for removal of SO/sub x/ or combined SO/sub x//NO/sub x/ removal. Information on lime/limestone scrubbers is limited to a tabulation of commercial sized installations. Emphasis is based on demonstrations and suggestions are provided as to why the particular projects are considered to be in advance of US technology. Areas of Europe covered are Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Norway and Sweden. With a lower priority, Austria, Spain, and Switzerland were screened for the existence of relevant work. This survey allows the following tentative conclusions: (1) the most relevant work is performed in Germany and Scandinavia (Denmark, Norway and Sweden). Work of some relevance was identified in the Netherlands and Italy; and (2) except for Germany, where FGD is applied commercially, no coal-fired lime/limestone scrubbers are operating commercially in the surveyed countries. (Outside Germany, the only operating lime/limestone scrubber is a 35 MW oil-fired unit in Stockholm). Four processes examined in Germany are described in some detail. (ERA citation 07:050125)

DE82008132 MF **A01**
Argonne National Lab., IL.
Energy and Air Quality.
Dec 81, 281p DOE/EV/10154-3
Contract AC02-80EV10154
Portions of document are illegible.
Best available copy from document source. Available in microfiche only.

This is one of a series of handbooks designed to provide nontechnical readers with a general understanding of the interaction between energy development and environmental media and to provide a rudimentary data base from which estimates of potential future impacts can be made. This handbook describes the air quality impacts of energy development and summarizes the major federal legislation which regulates the potential air quality impacts of energy facilities and can thus influence the locations and timing of energy development. In addition, this report describes and presents the data which can be used as the basis for measurement, and in some cases, prediction of the potential conflicts between energy development and achieving and maintaining clean air. Energy utilization is the largest emission source of man-made air pollutants. Choices in energy resource development and utilization generate varying emissions or discharges into the atmosphere, the emissions are affected by the assimilative character of the atmosphere, and the resultant air pollutant concentrations have biological and aesthetic effects. This handbook describes the interrelationships of energy-related air emissions under various methods of pollution control, the assimilative character of the air medium, and the effects of air pollution. The media book is divided into three major sections: topics of concern relating to the media and energy development, descriptions of how to use available data to quantify and examine energy/environmental impacts, and the data. (ERA citation 07:051443)

DE82006878 PC **A02**/MF **A01**
Air Pollution Technology, Inc., San Diego, CA.
Laboratory/Bench Scale Testing and Evaluation of A.P.T. Dry Plate Scrubber. Eighth Quarterly Progress Report, December 1, 1981 to February 28, 1982.
S. C. Yung, S. Calvert, R. C. Jain, T. Le, and H. Brattin. 17 Mar 82, 25p DOE/ET/15492-T26
Contract AC21-80ET15492

The A.P.T. Dry Plate Scrubber (DPS) uses a shallow, dense mobile bed of solid collector granules which move across a perforated plate. The gas stream containing fine particles and vapors is moved upward through the perforations to form high velocity gas jets. The fine particles are removed by inertial deposition onto the collector granules or by direct interception. Electrostatic forces also can be used to improve the collection efficiency and increase the adhesive forces between the particles and collectors. The DPS column consists of a series of collection stages (perforated plates) with the collectors either passing sequentially over each stage or being fed separately to each stage. The stages can be designed so as to promote the collection of large particles on the lower stages and the collection of fine particles and alkali vapors on the upper stages. The objective of this project is to conduct a bench scale experimental evaluation of the DPS at high temperature and pressure to determine its potential for controlling particulate and alkali vapor emissions from PFBC processes. Progress accomplished during the quarter is summarized. (ERA citation 07:045597)

DE82010337 PC **A04**/MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Estuarine Impacts of Fossil Fuel-Based Energy Technology: A Case Study.
R. Ritschard, V. Berg, and M. Henriquez. Sep 81, 67p LBL-13145
Contract W-7405-ENG-48
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Microfiche only after original copies are exhausted.

The purpose of this study is to assess the potential cumulative ecological impacts on an estuarine ecosystem resulting from fossil fuel technologies, both operating or proposed. San Francisco Bay is used as an example of such a system, since it is impacted by several fossil fuel-based activities in addition to other major actions. The available data on oil spills, energy facility discharges, and municipal outflows are examined. It is concluded that routine discharges from energy-related activities as well as other industrial sites may not be the most significant contributors to pollutant loadings of the Bay. Energy facilities do routinely discharge major pollutants. However, chronic low level discharge of oil from energy facilities including ships can pose a more serious problem to the ecosystem. The combination of effluents can interact with each other to create synergistic responses. The pollution from fossil fuel energy facilities must be considered in conjunction with that from other sources such as municipal waste discharge and Delta outflow. In addition, other future projects must be included in an ecological assessment of the Bay ecosystem. If all of these activities are considered, the health of the Bay may be at stake. We recommend: (1) that a comprehensive study be conducted of the entire Bay ecosystem; (2) that such an integrated ecological study include improved sampling techniques and an intercalibration of methods between researchers; and (3) that a more complete, better organized, and readily accessible data base on the pollutant loadings in the Bay be constructed. An assessment of this nature will be a useful tool to decision-makers throughout the country who are responsible for estuaries. (ERA citation 07:049205)

DE82011846 PC **A11**/MF **A01**
Department of Energy, Washington, DC. Economic Regulatory Administration.
Conversion to Coal New England Power Company Salem Harbor Generating Station Units 1, 2, and 3, Salem, Essex County, Massachusetts: Draft Environmental Impact Statement.
Feb 82, 241p DOE/EIS-0086-D
Portions of document are illegible.

This draft environmental impact statement (DEIS) assesses the potential impacts associated with the proposed finalization of prohibition orders for Units 1, 2, and 3 of the Salem Harbor Generating Station, located in Salem, Massachusetts. If finalized, the prohibition orders would prohibit the utility from using either natural gas or petroleum products as a primary energy source in the affected units; the utility proposes to conform to the orders by returning Units 1, 2, and 3 to burning low-sulfur coal. Major issues of environmental concern relating to the proposed conversion have been determined through the public scoping process and through discussion with other concerned agencies, and were found to include air and water quality, noise, and waste storage and disposal. These issues, as well as reasonable alternatives in the areas of plant conversion options, fuel type, air and water pollution control, ash disposal, and transportation, are discussed in the EIS. (ERA citation 07:042166)

DE82012228 MF **A01**
West Virginia Univ., Morgantown. Dept. of Aerospace Engineering.
Anisokinetic Sampling of Particulate in Duct Flows.
J. G. Svinos, R. A. Bajura, and A. Padhye. Feb 82, 112p DOE/MC/11284-T13
Contract AM21-79MC11284
Portions of document are illegible.
Available in microfiche only.

A theoretical model was developed to predict the error in the particulate concentration measurements due to anisokinetic sampling of flowing aerosols. The model is developed for flows with a uniform velocity profile upstream from the sampling probe. The probe wall was assumed infinitely thin and the particles were assumed to be spherical and monodisperse. The predictions of the theoretical model were generally in good agreement with analytical and experimental data. By curve fitting the results of the theoretical model, a correlation was developed which permits the calculation

of the concentration ratio for velocity ratios between 0.25 and 3.5 and Stokes numbers between 0.02 and 0.50. (ERA citation 07:044575)

N82-33890/6 PC **A05/MF A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Nasa Participation in the 1980 Pepe/Neros Project: Data Archive.
D. A. Brewer, E. E. Remsberg, G. R. Loar, and R. J. Bendura. Jul 82, 92p NAS 1.15:83189, NASA-TM-83189

Eight experimental air quality measurement systems were investigated during July and August 1980 as part of the EPA PEPE/NEROS fiel measurement program. Data from those efforts have been entered into an archive that may be accessed by other researchers. The data sets consists of airborne measurements of regional mixed layer heights and aerosol and ozone distributions as well as point measurements of meteorological parameters and ozone obtained during diurnal transitions in the planetary boundary layer. This report gives a discussion of each measurement system, a preliminary assessment of data quality, a description of the archive format for each data set, and a summary of several proposed scientific studies which will utilize these data.

N82-33891/4 PC **A11/MF A01**
INTERA Environmental Consultants Ltd., Ottawa (Ontario).
Analysis of Remote Sensing Data Collected for Detection and Mapping of Oil Spills: Reduction and Analysis of Multi-Sensor Airborne Data of the NASA Wallops Oil Spill Exercise of November 1978.
Final Report.
May 82, 241p NAS 1.26:165886, NASA-CR-165886
Contract NAS1-16178

Airborne, remotely sensed data of the NASA Wallops controlled oil spill were corrected, reduced and analysed. Sensor performance comparisons were made by registering data sets from different sensors, which were near-coincident in time and location. Multispectral scanner images were, in turn, overlayed with profiles of correlation between airborne and laboratory-acquired fluorosensor spectra of oil; oil-thickness contours derived (by NASA) from a scanning fluorosensor and also from a two-channel scanning microwave radiometer; and synthetic aperture radar X-HH images. Microwave scatterometer data were correlated with dual-channel (UV and TIR) line scanner images of the oil slick.

PB83-107342 PC **A04/MF A01**
Aerocomp, Inc., Costa Mesa, CA.
CHAVG - A Program for Computing Averages of Hourly Air Pollutant Concentrations, User's Guide,
Joseh A. Catalano, and Frank V. Hale, III. Sep 82, 67p EPA-600/8-82-015
Contract EPA-68-02-3442

CHAVG is a postprocessor program for computing running averages (averages that begin each hour and overlap) and end-to-end averages (averages that do not overlap) from hourly concentration files. Since running averages are greater than or equal to the end-to-end averages, there frequently may be a need to analyze concentration data (from measurement or from air quality simulation models, such as, the UNAMAP series) using both methods of averaging. Calculations are made for selected receptors, and these values are ranked for each of four averaging periods plus a fifth period selected by the user. Output tables are generated for each averaging period for each type of average selected by the user. This document describes the input, processing, and output of the program.

PB83-107870 PC **A05/MF A01**
California Univ., Berkeley. Inst. of International Studies.
New Light on Rural Electrification: The Evidence from Bolivia,
Judith Tendler. Sep 80, 95p R80.5, AID-PN-AAJ-030
Contract AID/DSAN-CA-0199

In 1973-74, A.I.D. financed a project to expand existing municipal electrical systems in Bolivia to seven outlying rural areas with the aim of servicing an additional 81,000 rural customers within 10 years. This report evaluates the project's impact on the rural poor in terms of three project objectives: improving the quality of life; stimulating economic production; and creating viable electric utilities.

PB83-108837 CP **T05**
Federal Power Commission, Washington, D.C.
Routing Floods through Reservoir System.
Software.
29 Nov 76, mag tape FSWEC-77/0115
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, tract, density, and parity. Call NTIS Computer Products if you have questions.

This program is designed for computing the effects of a number of reservoirs on passing floods. Also, it can be used for designing gated or ungated spillways. ...Software Description: The program is written in the FORTRAN programming language for implementation on an IBM 370 computer using the OS system. The computer memory requirement is 6K.

PB83-109181 CP **T05**
Shell Oil Co., Houston, TX.
SPILLS: An Evaporation/Air Dispersion Model for Chemical Spills on Land.
Model-Simulation,
M. T. Fleischer, R. P. Deschner, and R. M. Grimes. Sep 82, mag tape NTIS/DF-83/001
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions. Price includes documentation, PB83-109470.

SPILLS, an unsteady-state model representing the evaporation of a chemical spill and the atmospheric dispersion of the vapors is presented. The model estimates concentrations of the vapors as a function of time and distance downwind of instantaneously-formed pools of liquids or liquefied gases, continuous spills, or stacks. The computer program is user-oriented and written in a conversational mode to allow its use with only a minimum user knowledge of operating a remote, portable terminal. Program outputs consist of maximum concentrations and their locations, concentrations at specified points and constant concentration contour plots. The accuracy of the model is established by comparison with available experimental data and steady-state air dispersion programs...Software Description: The system is written in the FORTRAN programming language for implementation on IBM 370-168 computer using the VM/SP CMS operating system.

PB83-109470 PC **A05/MF A01**
Shell Development Co., Houston, TX.
SPILLS: An Evaporation/Air Dispersion Model for Chemical Spills on Land.
Final rept.,
M. T. Fleischer. Dec 80, 96p NTIS/DF-83/001A
For system on magnetic tape, see PB83-109181.

SPILLS, an unsteady-state model representing the evaporation of a chemical spill and the atmospheric dispersion of the vapors is presented. The model estimates concentrations of the vapors as a function of time and distance downwind of instantaneously-formed pools of liquids or liquefied gases, continuous spills, or stacks. The computer program is user-oriented and written in a conversational mode to allow its use with only a minimum user knowledge of operating a remote, portable terminal. Program outputs consist of maximum concentrations and their locations, concentrations at specified points and constant concentration contour plots. The accuracy of the model is established by comparison with available experimental data and steady-state air dispersion programs.

PB83-114041 PC **A05/MF A01**
PEDCo-Environmental, Inc., Kansas City, MO.
TSP Source Inventory Around Monitoring Sites in Selected Urban Areas, Portland.
May 79, 100p
Contract EPA-68-02-2603

EPA is developing an empirical model to relate ambient air quality to particulate emissions and land use in the surrounding area. This receptor-oriented model will be used for evaluating the effect of particulate control measures on concentrations at individual sites in a sampling network or for predicting air quality at a location where there is no sampler. PEDCo Environmental is collecting most of this detailed data base used in the study and providing it to the EPA in the form of a series of reports, one for each of the five cities in which sites are to be surveyed: Kansas City, Portland, St. Louis, Birmingham, Philadelphia. Each of PEDCo's reports follow the same format, and the reports are confined almost entirely to data presentation. The present report summarizes information for sites in the Portland area. The 10 high volume sampling sites inventories in the Portland area have a wide distribution of exposures ranging from industrial to background.

PB83-114058 PC **A11/MF A01**
PEDCo-Environmental, Inc., Kansas City, MO.
TSP Source Inventory Around Monitoring Sites in Selected Urban Areas, Kansas City.
May 79, 233p
Contract EPA-68-02-2603

EPA is developing an empirical model to relate ambient air quality to particulate emissions and land use in the surrounding area. This receptor-oreinted model will be used for evaluating the effect of particulate control measures on concentrations at individual sites in a sampling network or for predicting air quality at a location where there is no sampler. The present report summarizes information for sites in the Kansas City area.

PB83-114207 PC **A05/MF A01**
National Oceanic and Atmospheric Administration, Oak Ridge, TN. Air Resources Atmospheric Turbulence and Diffusion Lab.
MPTER-DS: The MPTER Model Including Deposition and Sedimentation. User's Guide.
Rept. for Aug 80-Feb 82,
K. Shankar Rao, and Lynne Satterfield. Oct 82, 84p EPA-600/8-82-024

MPTER is the designation for a multiple point source air quality model with terrain adjustments. The diffusion algorithm is based upon Gaussian plume modeling assumptions. The MPTER model is available from the U.S. Environmental Protection Agency and can be used for estimating air pollutant concentrations from multiple sources in rural environments. The model has technical input options for terrain adjustment, stack downwash, gradual plume rise, and buoyancy-induced dispersion, and a great variety of output options. This report is a supplementary User's Guide to a modified version of MPTER, MPTER-DS, which can explicitly account for dry deposition of gaseous and suspended particulate pollutants in the plume. The MPTER-DS model utilizes the Gaussian plume-type diffusion-deposition algorithms based on analytical solutions of a gradient-transfer model.

PB83-114751 PC **A13/MF A01**
Southeastern Louisiana Univ., Hammond. Coll. of Business.
Technological Response to Environmental Protection Regulations and Energy Price/Supply Structure: A Case Study of Chlorine/Caustic Soda Manufacturing,
Joe C. Iverstine, Jerry L. Kinard, and Robert M. Cudd. Nov 81, 280p NSF/PRA-81015
Grant NSF-PRA79-11933

A study to assess the technological response of chlorine/caustic soda manufacturers to environment regulations and energy constraints is reported. Data were gathered via personal interviews with corporate officials representing 92 percent of the total United States chlorine/caustic soda manufacturers. Equipment venders were interviewed to obtain performance data, and secondary data were gathered from trade journals, trade associations, and the Chlorine Institute. The report (1) presents a framework for analyzing technological innovations; (2) addresses the specific technological innovations in chlorine/caustic soda manufacturing processes resulting from environmental protection regulations; (3) focuses on innovations in process technologies due to the spiralling costs and potential shortages of energy; (4) summarizes research findings; and (5) presents conclusions on the impact of technological innovations. A comparison of three alternative technologies using the best demonstrated efficiencies indicates that excellent energy savings are currently available by adopting membrane cell technology in lieu of the use of mercury or diaphragm cells. From both environmental and energy perspectives, it was suggested that membrane technology should be considered strongly in capacity

planning. Reviewer comments are included in the report.

PB83-115972 PC **A11**/MF **A01**
TRW, Inc., Durham, NC.
Analysis of New Source Review (NSR) Permitting Experience,
L. Hayes, W. Warren-Hicks, L. Bravo, J. Avery, and J. Shumaker. Aug 82, 249p
Contract EPA-68-02-3174

Pursuant to the Clean Air Act Amendments of 1977 EPA, in 1978, revised its New Source Review (NSR) regulations. The revised Prevention of Significant Deterioration (PSD) regulations were more extensive than their predecessors in that many more sources were subject to PSD requirements. The NSR regulations were again revised in 1980 as a result of litigation. This report deals with a sample of the pre-construction permits issued under EPA's post-1977 NSR regulations. The data and information contained in this report summarize results of a study directed at assessing the experience of EPA's New Source Review (NSR) Program. Information extracted from Prevention of Significant Deterioration (PSD) and non-attainment permit files augmented by data obtained from company representatives have been compiled, analyzed and interpreted. An automated (computer) data base has been constructed containing relevant data for each of more than 285 PSD and non-attainment permits issued since 1978.

PB83-115980 PC **A04**/MF **A01**
TRW, Inc., Research Triangle Park, NC.
Analysis of New Source Review (NSR) Permitting Experience: Executive Summary.
Aug 82, 53p
Contract EPA-68-02-3174

This report surveys 285 Prevention of Significant Deterioration (PSD) permits issued between 1978 and 1980 and analyzes permit processing times, the stringency of permit limitations, the impact of PSD 'increment,' and other aspects of the PSD program.

PB83-116020 PC **A03**/MF **A01**
National Oceanic and Atmospheric Administration, Boulder, CO. Office of Marine Pollution Assessment.
Environmental Assessment of Marine Disposal Options for Waste Management Systems: Program Development Plan.
Jul 82, 36p NOAA-82101103

Discharge into coastal waters of the United States is once again receiving increasing consideration as an acceptable disposal option for municipal wastes (sewage sludges and effluents). Such disposal poses risk to marine/aquatic resources and environmental amenities which are of broad value to the nation. The potential scale of waste disposal requires comprehensive and objective evaluation, at the Federal level, of all reasonable alternatives, including land-based, ocean, and atmospheric disposal strategies in terms of overall economic costs and risk to the environment and to public health. Such a comprehensive analysis is required so that the nation can identify and select policies and practices that will minimize the total costs (economic, environmental, and health) of municipal waste disposal. Under this program, NOAA will undertake the integrated environmental assessment of marine/aquatic disposal options. The proposed program will complement and extend existing marine environmental research programs to provide for more effective application of information to marine waste disposal management.

PB83-116079 PC **A09**/MF **A01**
Michigan Dept. of Natural Resources, Lansing. Water Quality Div.
Groundwater Management Strategy for Michigan: Social and Economic Impacts of Toxic Waste Sites: Rose and Springfield Townships, Oakland County, Michigan,
Lillian F. Dean. Jun 82, 192p MI/DNR/GW-82/06
Grant EPA-P-005588-01
See also PB82-143884.Prepared in cooperation with Southeast Michigan Council of Governments, Detroit.

This report presents the Rose and Springfield Township orphaned toxic waste sites as a case history. Events and agency actions related to site cleanup and water well testing (1968 to 198i) are described. Based upon interviews with area residents, the types of social and economic impacts that were experienced are identified. Alternative activities are also identified to aid local governments in dealing with the discovery of toxic waste sites.

PB83-116319 PC **A04**/MF **A01**
Transportation Research Board, Washington, DC.
Geotechnical Instrumentation for Monitoring Field Performance.
Final rept.,
John Dunnicliff. Apr 82, 56p TRB/NCHRP/SYN-89
Report on National Cooperative Transit Research and Development Program, Synthesis of Transit Practice. Also available from Transportation Research Board, 2101 Constitution Ave. N.W. Washington, DC.

This synthesis will be of special interest to geotechnical engineers and others seeking information on instrumentation for monitoring performance in subsurface construction. Guidance is provided on acquisition and application of instruments for measuring soil conditions. Geotechnical engineers are making greater use of instrumentation to monitor indicators of field performance such as pore pressure, earth pressure, deformation, load, and strain. This report of the Transportation Research Board provides guidance on selection and use of the necessary geotechnical instrumentation.

PB83-116681 PC **A03**/MF **A01**
University of Southern California, Los Angeles. Inst. for Marine and Coastal Studies.
The California State Coastal Conservancy: A Guide for Planners,
Peri A. Muretta. Mar 82, 36p USCSG-AS01-82
Grant NA80AA-D-00100

The California State Coastal Conservancy was created by the California Legislature in 1976 as a division of the State Resources Agency with a mandate to protect, enhance and restore coastal resources. Although the creation of the Conservancy was contingent upon the passage of California Coastal Legislation (SB 1277), the Conservancy is a separate and distinct entity from the California Coastal Commission. The Commission involvement is in broad local coastal planning while the Conservancy can actually acquire land and undertake specific developments needed to enhance or restore coastal zone resources or to provide public access opportunities. The Conservancy's activities cover six program areas: site reservation, agricultural preservation, coastal restoration, resource enhancement, public access, and non-profit land trusts.

PB83-116871 PC **A23**/MF **A01**
Environmental Protection Agency, Washington, DC. Effluent Guidelines Div.
Development Document for Effluent Limitations Guidelines and Standards for the Textile Mills Point Source Category.
Final rept.,
Anne M. Gorsuch. Sep 82, 535p EPA-440/1-82/022

This document presents the findings of an extensive study of the textile industry for the purpose of developing effluent limitations for existing point sources, standards of performance for new sources, and pretreatment standards for existing and new sources to implement Sections 301, 304, 306, and 307 of the Clean Water Act. The study covers approximately 6,000 textile manufacturing facilities in SIC Major Group 22 of which approximately 2,000 are specifically affected by the findings. Effluent limitation guidelines are set forth for the degree of effluent reduction attainable through the application of the best practicable control technology currently available (BPT), and the best available technology economically achievable (BAT) and the best conventional pollutant control technology (BCT) which must be achieved by existing point sources by July 1, 1984. Supporting data, rationale, and methods for development of the effluent limitation guidelines and standards are contained in this document.

PB83-116921 PC **A02**/MF **A01**
Robert S. Kerr Environmental Research Lab., Ada, OK.
Transport and Fate of Selected Organic Pollutants in a Sandy Soil.
Journal article,
J. T. Wilson, C. G. Enfield, W. J. Dunlap, R. L. Cosby, and D. A. Foster. Oct 81, 8p EPA-600/J-80-036
Pub. in Jnl. of Environmental Quality, v10 n4 p501-506 1981.

To assess the minimal protection that soil can be expected to provide ground water, transport and fate of 13 organic pollutants were studied in a sandy soil with low organic matter content (0.087% organic C). Glass columns were packed with soil to a depth of 140 cm in a manner that preserved to the maximum extent possible the characteristics of the original soil profile. Columns received 14 cm/day of water containing a mixture of approximately 1.0 or 0.2 mg/liter of each of the organic compounds. Quantities of compounds that volatilized from the soil surface were measured, as well as concentrations in the column effluent. A simple mathematical model based on water solubility of the compound and the organic C content of the soil predicted the retardation factors of the pollutants within a factor of three.

PB83-116939 PC **A02**/MF **A01**
Municipal Environmental Research Lab., Cincinnati, OH.
An Overview of Current Spill Cleanup Technology,
Richard A. Griffiths. 1982, 16p EPA-600/D-82-341

A review of the equipment and techniques for responding to spills of dangerous cargoes is presented in the report. Categorizing spilled products as floaters, sinkers, mixers, or vapors provides a convenient viewpoint for discussing response technology, which depends strongly on which behavior the product exhibits. Spills of radioactive and bacteriological agents are not covered in this paper, though the potential use of bacteria for mitigating oil or chemical spills is noted. The technologies for responding to spills of floaters and sinkers are shown to be the most well developed of the four types. Equipment and techniques in common use by the United States and Canadian governments are discussed to illustrate this. Current technology includes both removal of the pollutant using non-conventional equipment such as booms, skimmers, dredges, or sorbents and in-place treatment such as chemically-enhanced dispersion, enhanced microbiological degradation, or in-place burning.

PB83-116954 PC **A02**/MF **A01**
Municipal Environmental Research Lab., Edison, NJ. Storm and Combined Sewer Section.
Porous Pavement: Research; Development; and Demonstration.
Journal article,
Richard Field, Hugh Masters, and Melvin Singer. May 82, 17p EPA-600/J-82-230
Pub. in Transportation Engineering Jnl. of ASCE, v108 nTE3 p244-258 May 82.

This paper discusses the U.S. Environmental Protection Agency's porous pavement research program along with the economics, advantages, potential applications, and status and future research needs of porous pavements. Porous pavements are an available stormwater management technique which can be used on parking lots and low volume roadways to reduce both stormwater runoff volume and pollution. In addition, groundwater recharge is enhanced. Also, cost reductions result due to elimination of curbs, drains, and small sized storm sewers. Porous asphalt pavements consist of a relatively thin course of open graded asphalt mix over a deep base of large size crushed stones. Water can be stored in the crushed stone base until it can percolate into the subbase or drain laterally. Other porous pavement types include concrete lattice blocks and a porous concrete mix.

PB83-117010 PC **A02**/MF **A01**
Industrial Environmental Research Lab., Research Triangle Park, NC.
Pollution Control Practices: Cost for Control of SO2 Emissions.
Journal article,
William D. Baasel, J. G. Ball, and Jeff L. Meling. Jun 82, 9p EPA-600/J-82-233
Pub. in Chemical Engineering Progress, v78 n6 p47-53 Jun 82. Prepared in cooperation with Radian Corp., Austin, TX.

The paper gives results of a study (part of a multiphased EPA study of the acid rain problem) the objectives of which were to (1) identify and characterize existing industrial sources of SO2 emissions, (2) identify the control techniques that can be used to reduce SO2 emissions from these sources, and (3) estimate the SO2 emission reduction potential and associated costs based on applying these controls. Only a portion of the SO2 sources were investigated in detail; simplifying assumptions were made about the balance of the

SO2 sources studied. The availability of low sulfur fuels (i.e., physically cleaned coal and low sulfur fuel oil) was not evaluated. In addition, since sites were not visited, the remaining useful lives of the sources were not determined and average flue gas desulfurization unit retrofit factors were estimated.

PB83-117051 PC **A02**/MF **A01**
Municipal Environmental Research Lab., Cincinnati, OH.
Water Pollution Control Technology in the USA.
Journal article,
Robert L. Bunch. 1982, 9p EPA-600/J-81-131
Pub. in Water Quality Bulletin (WHO), v7 n3 p107-112, p149-150 Jul 82.

A historical perspective of the need for, and the development of technology, for wastewater treatment is presented. Legislative activity for environmental enhancement closely followed public interest. Currently, major concerns in wastewater technology are sludge disposal, control of toxic substances, and prevention of eutrophication.

PB83-117077 PC **A02**/MF **A01**
Stanford Univ., CA. Dept. of Civil Engineering.
Advection-Dispersion Interpretation of Tracer Observations in an Aquifer.
Journal article,
Eduard Hoehn, and Paul V. Roberts. 1982, 11p EPA-600/J-82-232
Grants EPA-CR-808851, EPA-R-804431
Pub. in Ground Water, v20 n4 p457-465 Jul-Aug 82.

Data from field tracer experiments are interpreted to evaluate the adequacy of an advection-dispersion model for simulating field conditions. A stimulus-response approach based on chemical reactor theory was applied. Two different pulse stimuli at an injection well resulted in responses in two observation wells located at distances of 8 and 17 m, respectively, from the injection well. The wells are perforated over the entire aquifer thickness of 1-2 m. The behavior of the two conservative tracers agreed closely with each other. A two-domain model is employed to extend the simple advection-dispersion equation to account for the observed tailing. Response curves of concentrations were fitted with finite-difference simulations using the two-domain model. The responses at the more distant well were characterized by values of dispersivity equal to or slightly smaller than those at the nearer well.

PB83-117234 PC **A03**/MF **A01**
Federal Railroad Administration, Washington, DC.
The 1981 Operation Lifesaver National Symposium, August 27-29, 1981, Chicago, Illinois.
Aug 81, 46p
Sponsored in part by National Safety Council, Chicago, IL.

This report covers the presentations and addresses by keynote and general session speakers. The conference objective was to review past and current Operation Lifesaver programs, define today's issues and problems, develop methods and techniques which will increase driver awareness of hazards at rail-highway crossings.

PB83-117259 PC **A03**/MF **A01**
Louisiana Dept. of Transportation and Development, Baton Rouge. Research and Development Section.
Thin Bonded P.C.C. Resurfacing: Interim Report Number 1.
Rept. Apr 81-Jun 82,
William H. Temple, and Masood Rasoulian. Jun 82, 49p LA-80-3P(B), RR-156, FHWA/LA-82/156

The purpose of this study was to evaluate the construction techniques and performance characteristics of the La. DOTD's first portland cement concrete resurfacing project which was constructed over a short section of an existing 9-inch concrete pavement located on US 61 north of Baton Rouge. The old pavement surface was cleaned with a device which blasted the surface with small steel shot. The resurfacing concrete consisted of a 5.8-bag, air-entrained limestone concrete with an average thickness of 4 inches. A water cement grout was used as a bonding agent and was sprayed on the old pavement immediately prior to overlay.

PB83-117549 PC **A07**/MF **A01**
Michigan Univ., Ann Arbor. Sea Grant Program.
Bluff Slumping Workshop (Proceedings).
Feb 82, 135p MICHU-SG-82-901, NOAA-82093008
Grant NA80AA-D-00072

Contents: Causes and mechanics of coastal bluff recession in the Great Lakes; Methods of preventing bluff recession; Assessment of the effectiveness of corrective measures in relation to geological conditions and types of slope movement; Regulations to reduce coastal erosion losses.

PB83-117564 PC **A04**/MF **A01**
Texas Univ. at Austin. Center for Transportation Research.
Evaluation of the Dynamic Arterial-Responsive Traffic System (DARTS).
Final rept.,
Clyde E. Lee. Aug 82, 72p CTR-3-18-78-243-1F, FHWA/TX-82/25-243-1F
Sponsored in part by Texas State Dept. of Highways and Public Transportation, Austin.

DARTS is an auxiliary solid-state electronic timing and switching device which can be connected directly to any modern (NEMA Standards) full-actuated traffic signal controller for the purpose of coordinating the timing of pairs of such controllers at adjacent intersections in such a way that progressive movement is provided for platoons of traffic traveling along an artery. No modification of the basic controller installation nor traveling along an artery. No modification of thebasic controller installation nor timing is required, and only one pair of conductors is needed to transmit the necessary platoon identification information from the upstream intersection. Functioning of the platoon identification and progression timing sequence provided by DARTS is described in the report along with functions which monitor traffic on conflicting phases in order to preclude excessive delays and queue buildups from occurring on these approaches.

PB83-117572 PC **A07**/MF **A01**
Santa Fe Research Corp., NM.
Development and Application of Methods for Estimating Inhalable and Fine Particle Concentrations from Routine Hi-Vol Data.
Final rept.,
John Trijonis, and Marilyn Davis. Dec 81, 150p ARB-R-81/171
Contract ARB-A0-076-32

Formula for translating Hi-Vol data into estimates of inhalable particles (IP) and fine particles (FP) are developed, evaluated, and applied. The equations are developed using simultaneous data from dichotomous samplers and Hi-Vol samplers at 75 locations nationwide, including 11 locations in California. The formula are multivariate in the sense that they include the Hi-Vol parameters, TSP, SO4(-2), and Pb; the formula are hybrid in the sense that the coefficients are partly physico-chemical and partly statistical. A major application study using 5 years of Hi-Vol data at 226 California sites allows us to investigate the statistical, geographical, and seasonal patterns of TSP, IP, and FP throughout California. The most salient features of the application study involve the extremely high particulate concentrations in the Los Angeles area and the San Joaquin Valley.

PB83-117739 PC **A03**/MF **A01**
National Oceanic and Atmospheric Administration, Oak Ridge, TN. Air Resources Atmospheric Turbulence and Diffusion Lab.
PAL-DS Model: The PAL Model Including Deposition and Sedimentation. User's Guide.
Rept. for Aug 80-Feb 82,
K. Shankar Rao, and H. F. Snodgrass. Oct 82, 49p EPA-600/8-82-023

PAL is an acronym for an air quality model which applies a Gaussian plume diffusion algorithm to point, area, and line sources. The model is available from the U.S. Environmental Protection Agency and can be used for estimating hourly and short-term average concentrations of non-reactive pollutants at multiple receptors from several sources of each type. PAL is intended to assess the impact on air quality, on scales of tens of meters to several kilometers, of portions of urban areas such as shopping centers, large parking areas, and airports. Level terrain is assumed, and pollutant removal processes are ignored. This report is a supplementary User's Guide to a modified version of PAL, PAL-DS, model that utilizes Gaussian plume-type diffusion-deposition algorithms based on analytical solutions of a gradient-transfer model. The PAL-DS model can treat deposition of both gaseous and suspended particulate pollutants in the plume since gravitational settling and dry deposition of the particles are explicitly accounted for.

PB83-117937 PC **A04**/MF **A01**
Transportation Research Board, Washington, DC.
Concrete Analysis and Deterioration,
Robert J. Girard, Eugene M. Myers, Gerald D. Manchester, William L. Trimm, and Marvin L. Traylor. 1982, 60p TRB/TRR-853, ISBN-0-309-03357-8
Library of Congress catalog card no. 82-18833. Also pub. in ISSN-0361-1981.
Paper copy also available from Transportation Research Board, 2101 Constitution Ave., NW, Washington, DC. 20418.

The 10 papers in this report deal with the following areas: D-cracking: pavement design and construction variables; efforts to eliminate D-cracking in Illinois; recycling Portland cement concrete pavement; relation between pavement D-cracking and coarse-aggregate pore structure; Ohio aggregate and concrete testing to determine D-cracking susceptibility; durability of concrete and the Iowa pore index test; concrete evaluation by radar theoretical analysis; radar as applied to evaluation of bridge decks; effects of concrete deterioration on bridge response; and, accuracy of the Chace air indicator.

PB83-118075 PC **A04**/MF **A01**
National Marine Fisheries Service, La Jolla, CA. Southwest Fisheries Center.
Environmental Data Contouring Program EDMAP2,
Laurence E. Eber. Apr 82, 66p NOAA-TM-NMFS-SWFC-18, NOAA-82082601

This program was designed for computing two-dimensional contour plots of environmental data fields defined at grid points on a rectangular grid. It is written in Burroughs B7800 ALGOL and consists of five components which include a host program and four external procedures. These must be linked together with the System BINDER program for execution.

PB83-118182 PC **A11**/MF **A01**
Northeastern Forest Experiment Station, Broomall, PA.
Stream Water Quality in the Coal Region of West Virginia and Maryland.
General technical rept. (Final),
Kenneth L. Dyer. 1982, 237p NEFES/83-1, FSGTR/NE-70

Data collected in 1977-79 from 48 small streams that drain unmined watersheds and 79 that drain areas where coal has been surface mined include common ions, alkalinity, acidity, pH, 16 trace elements, 5 nitrogenand phosphorous species, specific conductance, suspended solids, turbidity, settleable matter, water temperature, and estimated discharge.

PB83-118190 PC **A03**/MF **A01**
Geological Survey, Menlo Park, CA.
Stream Channel Stability Assessment.
Final rept. Jan-Oct 81,
J. C. Brice. Jan 82, 48p
Contract DTFH61-81-P-30085
See also PB-297 132.

Channel instability is manifested as lateral bank erosion, progressive degradation of the streambed, or natural scour and fill of the streambed. Lateral stability is related to stream type, and four major stream types having different stability characteristics are distinguished: equiwidth, wide-bend point bar, braided point-bar, and braided. Measurements of bank erosion on a study group of 36 streams indicate that equiwidth streams have the lowest lateral erosion rates and braided point-bar streams the highest. Also, erosion rates increase with stream size.

PB83-118232 PC **A11**/MF **A01**
PEDCo-Environmental, Inc., Cincinnati, OH.

Northeast Corridor Regional Modeling Project (NECRMP) Continuous Non-Methane Organic Compound Data Collection.
Final rept.,
Edward W. Mullin, Jr., and Ronald D. Heavner. Nov 80, 242p EPA-450/4-80-034
Contract EPA-68-02-3519

This program was proposed (1) to measure non-methane organic compounds (NMOC) at seventeen (17) selected sites in or near Boston, Baltimore, Washington, and New York, and (2) to measure NO/NO2/NOx at one site in Baltimore and one in Washington. These NMOC and NO/NO2/NOx measurements will be used to supplement others made by Federal, State, and local agencies and contractors monitoring ozone, NO/NO2/NOx, and meteorological parameters as part of the 1980 Northeast Corridor Regional Modeling Project (NECRMP). This report presents the data collection from June 1 to September 12, 1980.

PB83-118364 PC **A06/MF A01**
Federal Highway Administration, Washington, DC. Office of Research.
Vulnerability of Transportation Systems to Earthquakes—U.S.
Final rept. Jun 80-Aug 81,
Haaren A. Miklofsky. Oct 82, 117p FHWA/RD-81/128

This report describes the damage to transportation systems during past U.S. earthquakes and correlates the degree of damage with published M.M. isoseismal information for the earthquakes. The author considers the threshold of critical damage to highways and railroads to start at a Modified Mercalli intensity rating of VIII-IX, although limited damage has occurred in earthquakes with a M.M. intensity as low as VI.

PB83-118539 PC **A09/MF A01**
Environmental Coalition of Broward County, Inc., Fort Lauderdale, FL.
Handbook on the Biscayne Aquifer: Water Management, Water Conservation, Health and Cost of Drinking Water,
Brion Blackwelder, Brenda Marinace, and Joseph E. Podgor, Jr. 1982, 192p NSF/OSS-82002
Grant NSF-OSS79-27074
Color illustrations reproduced in black and white.

Information is presented from scientists, planners, and citizens concerning water resources in southeast Florida. Local groundwater and the Everglades-Okeechobee system are described and pollution of local groundwater, water consumption by urban and agricultural areas, methods of water conservation inside and outside the home, and the sharing of water resources with natural systems are discussed. The problems of growth and water supply are assessed, as are water standards, especially those relating to carcinogens such as trihalomethanes.

PB83-118638 PC **A04/MF A01**
New Jersey Dept. of Transportation, Trenton. Div. of Research and Demonstration.
The Effect of Raised Pavement Markers on Traffic Performance.
Final rept. Mar 78-Jun 82,
William L. Mullowney. Jun 82, 68p NJDOT-83-001-7769, FHWA/NJ-83/001

This project measured and documented the effect that snowplowable raised pavement markers (SRPM's) have on the behavior of traffic at certain geometric highway conditions. Two lane rural curves, highway exits with deceleration lanes and highway bifurcations were studied. Measures of performance selected to study the effects of the markers were: erratic maneuvers such as cutting through painted gores, weaving between exiting lanes, center and edge line encroachments; point of entrance into deceleration lanes; and mean speeds and speed variance at curves.

PB83-118760 PC **A03/MF A01**
Battelle Columbus Labs., OH.
Method for Measuring Carbon Fiber Emissions from Stationary Sources.
Final rept.,
W. M. Henry, C. M. Melton, and E. W. Schmidt. Aug 82, 43p EPA-600/3-82-080
Contract EPA-68-02-3229

Carbon fibers are highly conductive, lightweight and of small dimensions. When released as emissions from production, manufacturing, processing and disposal sources they may become airborne and disperse over wide areas. If they settle onto electronic or electrical components they can cause malfunctions and damage due to their high electrical conductivity. This research program was initiated to develop techniques to identify and measure carbon fiber concentrations emitted from manufacturing, processing, fabricating and incinerating sources. Its overall objective was to develop a measurement method useful to support possible emission regulatory actions. The method was tested on samples collected from various stationary emission sources and from a pilot-scale in-house incineration facility. The results of these emission measurements are reported.

PB83-119057 PC **A03/MF A01**
Transportation Systems Center, Cambridge, MA.
Summary of the Department of Transportation Rail-Highway Crossing Accident Prediction Formulas and Resource Allocation Model.
Final rept. Oct 80-Oct 81,
R. Coulombre, J. Poage, E. Farr, and J. Hitz. Sep 82, 29p DOT-TSC-FRA-82-1

The Highway Safety Acts of 1973 and 1976, and the Surface Transportation Assistance Act of 1978, provide funding authorizations to individual states to improve safety at public rail-highway crossings. The installation of active motorist warning devices, such as flashing lights or flashing lights with gates, is an important part of crossing safety improvements. The U.S. Department of Transportation (DOT) assists states and railroads in determining effective allocations of Federal funds for rail-highway crossing safety improvements. This report describes the resource allocation procedure developed to assist in the allocation of funds among crossings to achieve maximum crossing safety benefits for a given level of funding. The procedure consists of two parts. The first is an accident prediction formula which computes the expected number of accidents at each crossing. The second part is a resource allocation model designed to nominate crossings for improvement consideration on a cost-effective basis and to suggest the type of warning device to be installed.

PB83-119222 PC **E10/MF E10**
International Inst. for Applied Systems Analysis, Laxenburg (Austria).
Nonpoint Nitrate Pollution of Municipal Water Supply Sources: Issues of Analysis and Control.
Final rept.,
Karl-Heinz Zwirnmann. c1982, 315p ISBN-3-7045-0032-1, CP-82-S04

In many developed and developing regions throughout the world, water supply and management agencies are confronted by a steadily increasing demand for water. Water supply is usually constrained by natural, technological, and economic conditions. The limit on the quantity of water which can be tapped grows more severe, because deteriorating water quality necessitates more and more complex constraints. Operating with this in mind, regional water managers attempt to satisfy different supply interests, especially when these interests conflict with each other. Therefore the competing interests of agriculture, environment, and municipal water supply become increasingly important. For example, in recent years, water supply agencies have become progressively more concerned by high nitrate levels in municipal water supply sources. This volume presents papers presented at an IIASA task force meeting by hydrologists, hydrogeologists, engineers and agricultural economists. (Copyright (c) 1982 International Institute for Applied Systems Analysis.)

PB83-119248 PC **A03/MF A01**
Duke Power Co., Huntersville, NC. Environmental Services Section.
Relations Between Phytoplankton Growth Rates and Nutrient Dynamics in Lake Norman, North Carolina.
Technical rept. series,
Mary S. Rodriguez. 1982, 45p DUKEPWR/82-01

A baseline study of phytoplankton production and nutrient dynamics was conducted on Lake Norman, NC, a 13000-ha, warm-monomictic reservoir, prior to the initiation of thermal inputs from an 1180-MW nuclear electric generation facility. The objective of the study was to identify the major physical, chemical and biological processes controlling nutrient dynamics in Lake Norman, with specific reference to the impact of phytoplankton production on the cycling of carbon, nitrogen and phosphorus.

PB83-119305 PC **A04/MF A01**
Transportoekonomisk Inst., Oslo (Norway).
Program for Virksomheten 1983-1984 (Reseach amd Development Programs 1983-1984).
Apr 82, 64p ISBN-82-7133-403-4
Text in Norwegian.

The report describes the program for research and development for the Institute of Transport Economics for the years 1983-84.

PB83-119438 PC **A11/MF A01**
Radian Corp., Durham, NC.
Costs of Sulfur Dioxide, Particulate Matter, and Nitrogen Oxide Controls on Fossil Fuel Fired Industrial Boilers.
Final rept.,
Michael L. Bowen, and Mark S. Jennings. Aug 82, 248p EPA-450/3-82-021
Contract EPA-68-02-3058

This report is a resource document for the development of Federal standards of performance for control of sulfur dioxide, particulate matter and nitrogen oxides emissions from new industrial boilers. It gives capital and annualized costs for a variety of control technologies that can be applied to gas, oil, and coal fired industrial boilers. In addition to control costs for 30, 75, 150, and 400 million Btu per hour size model boilers, cost algorithms and a computer program are given in detail to allow for automated cost data development.

PB83-119552 PC **A07/MF A01**
Texas Univ. at Austin. Center for Transportation Research.
The Use of Road Profile Statistics for Maysmeter Calibration.
Research rept.,
David W. McKenzie, W. Ronald Hudson, and C. E. Lee. Aug 82, 148p CTR-3-8-79-251-1, FHWA/TX-82/26-251-1
Sponsored in part by Texas State Dept. of Highways and Public Transportation, Austin.Portions of this document are not fully legible.

The use of profile statistics from designated road sections has proved to be an effective method of Maysmeter calibration. For best results, the statistic used must be tailored so that it quantifies what Maysmeters, as a class, actually measure regardless of the intended use of the measurements. For this purpose, a family of profile summary statistics based on the concept of Root-Mean-Square Vertical Acceleration (RMSVA) was developed. Some of these statistics have been found to correlate strongly with Maysmeter response. Moreover, the relationships are linear, much as the relationships between different Maysmeter units are linear. When selected RMSVA indices are combined to form a serviceability index representing 'Maysmeter roughness,' an effective calibration standard results. This RMSVA-based reference, termed SIV, exhibits distinct advantages over the profile statistic (SI2) used previously for calibration.

PB83-119867 PC **A11/MF A01**
National Bureau of Standards, Washington, DC. National Measurement Lab.
Failure Prevention in Ground Transportation Systems - Proceedings of the 31st Meeting of the Mechanical Failures Prevention Group, Held at the National Bureau of Standards, Gaithersburg, MD, April 22-24, 1980.
Final rept.,
T. Robert Shives, and William A. Willard. Oct 82, 227p NBS-SP-621
Library of Congress catalog card no. 82-600597.
Sponsored in part by Office of Naval Research, Arlington, VA., National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center, and Naval Air Systems Command, Washington, DC.

These proceeding consist of 18 submitted entries (16 papers and 2 abstracts) from the 31st meeting of the Mechanical Failures Prevention Group which was held at the National Bureau of Standards, Gaithersburg, Maryland, April 22-24, 1980. The theme of the symposium was failure prevention in ground transportation systems. Areas of interest included rail vehicles and structures, highway and road bridges, pipeline transportation systems, and motor carriers.

PB83-119925 PC **A13/MF A01**
University of Southern California, Los Angeles. Inst. for Marine and Coastal Studies.

Tide-Induced Currents in Harbors of Arbitrary Shape.
Technical rept.,
Wen-Li Chiang, and Jiin-Jen Lee. Nov 79, 282p
USCSG-TR-01-81, NOAA-82081704
Grant NOAA-04-8-M01-186

The water quality in a harbor depends strongly on its circulation patterns. As a result, it is a primary importance to find an efficient method to study and predict the harbor circulation. The goal of the present study is to find an efficient way of predicting tide-induced currents in harbors of arbitrary shape and apply this general technique to various configurations (present and future) of Los Angeles-Long Beach Harbor. In order to achieve this goal a numerical model for the harbor circulation problem is proposed. The numerical method developed in this study is capable of reproducing the gyre structure in the harbor.

PB83-119982 PC **A07/MF A01**
Resource International, Inc., Worthington, OH.
Long Term Observations of Performance of Experimental Pavements in Ohio.
Final rept.,
Kamran Majidzadeh, and Rashad Elmitiny. Jul 82, 150p FHWA/OH-81/009
Sponsored in part by Ohio Dept. of Transportation, Columbus.

This report presents long term evaluation data and analyses for eight (8) experimental pavement projects constructed in Ohio. The study projects include both rigid and flexible pavements and are scattered throughout the state. Pavement age is currently approaching 10 years for some projects. The pavements were extensively monitored and tested at the time of construction, and during 1979 and 1980 as part of this research study. Collected data included pavement condition rating (PCR) of visible distress, Dynaflect deflection, test properties of core and subgrade samples, and estimated remaining structural life and overlay requirements.

PB83-120006 PC **A02/MF A01**
Mueser, Rutledge, Johnston and DeSimone, New York.
Western Metrobus Garage Facility Subsurface Investigation.
Rept. no. 8.
1 Oct 82, 23p MRJD-82-182
Contract WMATA-3Z725U
Prepared in cooperation with DeLeuw, Cather and Co., Inc., Washington, DC.

Results are summarized of two recovery wells and six borings with observation wells made near the site of the existing Western Metrobus Garage Facility which is located in Washington, D.C., bounded by Western Avenue on the north and Garrison Street on the south and by 44th Street and Wisconsin Avenue on the west and east, respectively. The report includes the location plan of the garage and adjacent structures and three representative geological sections through the facilities. Also included are logs of the test borings, results of laboratory tests on samples and comments on existing conditions.

PB83-120154 PC **A14/MF A01**
Skelly and Loy, Harrisburg, PA.
Development of Improved Topsoil Handling Techniques.
Open file rept. 21 Sep 79-23 Mar 81,
Michael Mancuso, Edward Lesney, and Thomas Simpson. 23 Mar 81, 314p BUMINES-OFR-173-82
Contract J0295047

This report summarizes the problems of topsoil handling as related to present requirements of law and current equipment availability. The most prevalent topsoiling systems are reviewed along with a listing of advantages, disadvantages, and best features of each system. Seven mining regions are included along with an analysis of prevailing land use, types of soils, and attendant physical, chemical, and biological characteristics. There are several probable areas of future research outlined that can benefit mining.

PB83-120253 PC **A11/MF A01**
Des Moines Integrated Community Area, IA.
Final Environmental Impact Statement for Sludge Disposal in the Des Moines Integrated Community Area,
G. T. Boblitt, J. W. Braswell, S. H. Fralish, G. M. Gibbons, and L. W. Grauvogel. Jul 82, 231p EPA-907/9-82-002
Prepared in cooperation with TenEch Environmental Engineers, Inc., and Engineering-Science, Inc.

The report describes the environmental effects of alternative municipal wastewater sludge treatment and disposal methods in the Des Moines Integrated Community Area including Polk, Warren, and Marion Counties, Iowa. Eight basic alternatives were considered. The coal mine reclamation alternatives provide the greatest benefit among the project alternatives, followed by land application and landfilling of dewatered sludge. Although the absolute impacts among these alternatives are not that different, improvement of the mine spoil sites results in a much greater site-specific beneficial impact. Land application of liquid sludge would have the greatest negative impact due to adverse socioeconomic factors. Land application of dewatered sludge at agonomic rates is the stated preferred alternative.

PB83-120287 PC **A05/MF A01**
Transportation Research Board, Washington, DC.
Bus Services,
Mark A. Turnquist, Arnim H. Meyburg, Stephen G. Ritchie, Michael Nelson, and Daniel Brand. 1982, 95p TRB/TRR-854, ISBN-0-309-03358-6
Library of Congress catalog card no. 82-18882. Also pub. in ISSN-0361-1981.
Paper copy also available from Transportation Research Board, 2101 Constitution Ave., NW, Washington, DC. 20418.

Contents: Innovative transit service planning model that uses a microcomputer; State of the art of current bus transfer practices; Short-term ridership-projection model; Connectivity index for systemwide transit route and schedule performance; Automation in public transit operation and management--update; Automatic vehicle monitoring--effective technique for transit system management and control; Comparing fixed-route and flexible-route strategies for intraurban bus transit; Concurrent-flow high-occupancy vehicle treatment on freeways-success story in Houston; Review of bus costing procedures; Potential impacts of transit service changes based on analytical service standards; Assessing user needs in design of a management information system for rural public transportation services; Madison Avenue dual-width bus lane project; and Public transit planning by using interactive computer graphics in Bellevue, Washington.

PB83-120295 PC **A05/MF A01**
Transportation Research Board, Washington, DC.
Bus Operations and Performance,
Brendon Hemily, Michael D. Meyer, John Attanucci, Nigel Wilson, and Brian McCollom. 1981, 82p TRB/TRR-857, ISBN-0-309-03360-8
Library of Congress catalog card no. 82-18893. Also pub. in ISSN-0361-1981.
Paper copy also available from Transportation Research Board, 2101 Constitution Ave., NW, Washington, DC. 20418.

Contents: Public transportation in the 1980s--responding to pressures of fiscal austerity; Design of bus transit monitoring programs; Performance-based funding-allocation guidelines for transit operators in Los Angeles County; Transit performance in New York State; Potential role of decision support systems in transit management; TRI-MET'S self-service fare collection program; Atlanta transit pricing study--moderating impact of fare increases on poor; Socioeconomic and travel-behavior characteristics of transit pass users; Economics of transit fare prepayment--passes; Evaluation of employer-based transit pass programs; Average transit trip lengths by racial and income classes in Atlanta--equity of flat fares based on trip length; Operational and revenue implications of implementing employer-based transit pass program; and Graphical person-machine interactive approach for bus scheduling.

PB83-120352 PC **A12/MF A01**
Environmental Protection Agency, Dallas, TX. Region VI.
Environmental Impact Statement: Henry W. Pirkey Power Plant Unit-I/South Hallsville Surface Lignite Mine Project, Harrison County, Texas.
Final rept. (Draft).
Sep 82, 262p EPA-906/9-82-011

Proposed projects include a 720 MW power plant, three 138 kv transmission lines, make-up water pipeline and railroad spur. The 272 acre plant island and 1,388 acre cooling reservoir have been cleared, the 100 acre railroad spur has been constructed as well as a portion of the 700 acre water pipeline. The lignite mine will cover about 20,771 acres of which about 10,545 acres will be impacted by mining. An average of 2.8 tons/year will be mined for 24 years. The reconstructed soil will consist of 6 inches of topsoil over a mixture of the remaining soil and the near-surface overburden. A minimum of 48 inches of cover will be provided over unoxidized overburden, and revegetation will use approved plant species.

PB83-121731 PC **A14/MF A01**
Cincinnati Water Works, OH.
Feasibility Study of Granular Activated Carbon Adsorption and On-Site Regeneration. Volume 1: Detailed Report.
Final rept.,
Richard Miller, and David J. Hartman. Oct 82, 305p
EPA-600/2-82-087A
Grant EPA-CR-805443
See also Volume 2, PB83-121749.

Most research pertaining to water quality and treatment methods conducted in the United States in the last decade utilized pilot-scale components. This project employed full-sized filters, post-filtration contactors and carbon regeneration furnace at one site to study carbon's ability to remove organics from Ohio River Water. Various GAC bed depths and types were studied in order to compare organic removal efficiencies, bed lives, general water quality characteristics, the need of a sand underlayer and operational problems. Pilot-scale GAC components were also used to determine the reliability of pilot columns as indicators of the performance of full-scale components. The relative performance of lignite and bituminous-based GAC was also studied in pilot columns. In the most important phase of this project, the relative performance of GAC filters to post-filtration GAC contactors was studied along with the most advantageous empty bed contact time for the GAC contactors and the effectiveness of on-site GAC regeneration. Finally, a significant aspect of this project was the development of preliminary cost estimates for full-plant conversion to GAC. Volume I is the detailed report.

PB83-121749 PC **E17/MF$6.25**
Cincinnati Water Works, OH.
Feasibility Study of Granular Activated Carbon Adsorption and On-Site Regeneration. Volume 2: Supplemental Figures and Data.
Final rept.,
Richard Miller, and David J. Hartman. Oct 82, 591p
EPA-600/2-82-087B
Grant EPA-CR-805443
Includes seven sheets of 48X reduction microfiche.
See also Volume 1, PB83-121731.

Most research pertaining to water quality and treatment methods conducted in the United States in the last decade utilized pilot-scale components. This project employed full-sized filters, post-filtration contactors and carbon regeneration furnace at one site to study carbon's ability to remove organics from Ohio River Water. Various GAC bed depths and types were studied in order to compare organic removal efficiencies, bed lives, general water quality characteristics, the need of a sand underlayer and operational problems. Pilot-scale GAC components were also used to determine the reliability of pilot columns as indicators of the performance of full-scale components. The relative performance of lignite and bituminous-based GAC was also studied in pilot columns. In the most important phase of this project, the relative performance of GAC filters to post-filtration GAC contactors was studied along with the most advantageous empty bed contact time for the GAC contactors and the effectiveness of on-site GAC regeneration. Finally, a significant aspect of this project was the development of preliminary cost estimates for full-plant conversion to GAC. Volume II includes data graphs not included in Volume I and microfilm images of all raw data developed under the project.

PB83-122655 PC **A02**/MF **A01**
Bureau of Mines, Avondale, MD. Avondale Research Center.
Characterization of U.S. Cement Kiln Dust.
Information circular/1982,
Benjamin W. Haynes, and Gary W. Kramer. Sep 82, 25p BUMINES-IC-8885
Library of Congress catalog card no. 82-600149. Errata sheet inserted.

Cement kiln dust (CKD) produced in the contiguous United States and Hawaii was characterized as part of the Bureau of Mines' program in minerals environmental technology. The mineralogical and chemical composition was determined for 113 CKD samples from 102 plants that normally send CKD waste to landfill. To assess the hazardous waste potential of CKD, the U.S. Environmental Protection Agency Extraction Procedure (EP) toxicity test was performed on all 113 CKD samples. All but one sample were in compliance with the test; the noncomplying sample slightly exceeded the EP toxicity test criterion for lead.

PB83-122671 PC **A04**/MF **A01**
Battelle Pacific Northwest Labs., Richland, WA.
Mathematical Model, SERATRA, for Sediment-Contaminant Transport in Rivers and its Application to Pesticide Transport in Four Mile and Wolf Creeks in Iowa.
Final rept. Apr 78-Jan 80,
Y. Onishi, and S. E. Wise. Aug 82, 72p EPA-600/3-82-045
Contract EPA-68-03-2613

The sediment-contaminant transport model SERATRA was used as an integral part of the Chemical Migration and Risk Assessment (CMRA) Methodology, which simulates migration and fate of a contaminant over the land surface and in receiving streams, to assess potential short- and long-term impact on aquatic biota. SERATRA, an unsteady, two-dimensional finite element model, consists of three submodels coupled to include the effects of sediment-contaminant interactions--a sediment transport submodel, a dissolved contaminant transport submodel, and a particulate contaminant transport submodel.

PB83-122747 PC **A10**/MF **A01**
GARD, Inc., Niles, IL.
Assessment of Current Fabrication Technology for Welded Bridges.
Interim rept. Aug 80-Dec 80,
R. N. Johnson. Mar 82, 204p FHWA/RD-81/125
Contract DTFH61-80-C-00083

This report is a general survey which evaluates all the pertinent work that has been accomplished in recent years in the area of bridge welding. It includes discussions involving base material selection and weldability studies, specific welding techniques employed, governing codes and specifications, metallurgical aspects including microstructure and mechanical properties, inspection techniques - nondestructive evaluation, weld flaw studies, and examples of successful bridge welding in other countries. This information will aid in determining the most economic and reliable welding process for bridge fabrication.

PB83-122788 PC **A19**/MF **A01**
Burns and Roe Industrial Services Corp., Paramus, NJ.
Fate of Priority Toxic Pollutants in Publicly Owned Treatment Works, Volume I.
Final rept.
Sep 82, 446p EPA-440/1-82-303-VOL-1
Contract EPA-68-01-5832
See also PB82-263880, and Volume 2, PB83-122796.

The purpose of this study is to determine the fate of priority toxic pollutants in publicly owned treatment works (POTW). Influent, effluent, and sludge samples were collected at 50 POTWs and analyzed for conventional selected nonconventional, and priority toxic pollutants. Volume I cotains a discussion of how the sampling episodes were conducted, presents the charateristics of each POTW, summarizes the analytical results and presents the results of preliminary evluations of the data.

PB83-122796 PC **A99**/MF **A01**
Burns and Roe Industrial Services Corp., Paramus, NJ.
Fate pf Priority Toxic Polluntants in Publicly Owned Treatment Works, Volume II.
Final rept.
Jul 82, 755p EPA-440/1-82-303-VOL-2
Contract EPA-68-01-5832
See also PB83-122788.

The purpose of this study is to determine the fate of priority toxic pollutants in publicly owned treatment works (POTW). Influent, effluent, and sludge samples were collected at 50 POTWs and analyzed for conventional selected nonconventional, and priority toxic pollutants. Volume II contains the daily analytical results for each of the 50 sampling episodes.

PB83-122804 PC **A10**/MF **A01**
California Inst. of Tech., Pasadena. Environmental Quality Lab.
Implementing Tradable Emissions Permits for Sulfur Oxides Emissions in the South Coast Air Basin. Volume II. Main Report,
Glen R. Cass, Robert W. Hahn, and Roger G. Noll. 30 Jun 82, 218p ARB-R-82/172
Contract ARB-A8-141-31
See also Volume 3, PB83-122812.

Tradable emissions permits have important theoretical advantages over source-specific technical standards as a means for controlling pollution. Nonetheless, difficulties can arise in trying to implement an efficient, competitive market in emissions permits. Simple workable versions of the market concept may fail to achieve the competitive equilibrium, or to take account of important complexities in the relationship between the pattern of emissions and the geographical distribution of pollution. Existing regulatory law may severely limit the range of market opportunities that states can adopt. This report examines the feasibility of tradable permits for controlling particulate sulfates in the Los Angeles airshed. Although the empirical part of the paper deals with a specific case, the methods developed have general applicability. Moreover, the particular market design that is proposed -- and auction process that involves no net revenue collection by the state -- has attractive features as a general model.

PB83-122812 PC **A18**/MF **A01**
California Inst. of Tech., Pasadena. Environmental Quality Lab.
Implementing Tradable Emissions Permits for Sulfur Oxides Emissions in the South Coast Air Basin. Volume III: Appendices.
Glen R. Cass, Robert W. Hahn, and Roger G. Noll. Jun 82, 415p ARB-R-82/173
Contract ARB-A8-141-31
See also Volume 2, PB83-122804.

Tradable emissions permits have important theoretical advantages over source-specific technical standards as a means for controlling pollution. Nonetheless, difficulties can arise in trying to implement an efficient, competitive market in emissions permits. Simple workable versions of the market concept may fail to achieve the competitive equilibrium, or to take account of important complexities in the relationship between the pattern of emissions and the geographical distribution of pollution. Existing regulatory law may severly limit the range of market opportunities that states can adopt. This report examines the feasibility of tradable permits for controlling particulate sulfates in the Los Angles airshed. Although the empirical part of the paper deals with a specific case, the methods developed have general applicability. Moreover, the particular market design that is proposed -- an auction process that involves no net revenue collection by the state -- has attractive features as a general rule.

PB83-122887 PC **A08**/MF **A01**
Real Estate Research Corp., Chicago, IL.
Infill Development: Opportunities and Constraints, King County, Washington. Case Study,
Deborah Brett. Nov 81, 172p HUD-0002278
Contract HUD-H-2982

This report covers the results of a case study of infill development opportunities undertaken in King County, Wash. Infill development can be broadly defined as the use of sites that have remained vacant in otherwise builtup areas. These sites can range in size from a vacant lot of 1,000 square feet to large tracts of over 100 acres. Findings in this report are based on inspections and secondary data collected for a stratified systematic sample of 167 vacant infill parcels (68 in the City of Seattle and 99 in the suburbs). Interviews were conducted with owners of 129 of these properties to assess regional market and governmental concerns affecting infill feasibility. The study found that fully serviced infill land in King County could meet a significant portion of the county's growth - related land needs over the next 10 years; that the size of vacant tax parcels in the sample ranged from just under 2,000 square feet to 36 acres (with a mean size of just under 2 acres); that 52 percent of the sampled properties had vacant adjacent land and 60 percent were found to have other vacant parcels on the same block; and that environmental limitations on infill potential were not so extensive as is commonly believed. Neighborhood maintenance levels in the vicinity of vacant sites were rated good or fair for over 95 percent of all sampled infill parcels. The study also found that 75 percent of the owners of the sampled vacant infill parcels in King County who were interviewed were not in the real estate business. Moreover, government agencies owned 16 percent of the sampled infill properties, primarily within the City of Seattle. Nearly half of the sampled parcels' owners were not planning to make their property available for development in the next 5 years, increasing the pressure for further conversion of land from rural to urban uses at the fringe. Results of cost comparisons for developing standard townhouse units for three typical sites are discussed. Figures, tables, maps, and footnotes are provided.

PB83-122903 PC **A11**/MF **A01**
Future of Rental Housing and New Forms of Homeownership,
Mathew Edel, Peter Eilbott, and Albert M. Levenson. 20 Nov 81, 227p HUD-0002280
Grant HUD-H-5141RG

This study analyzes the condominium - cooperative conversion phenomenon within the context of the rental market. Models are produced which explain the variation of the rental stock and its components across Standard Metropolitan Statistical Areas (SMSA's), the tenure choice of individual households, the conversion of housing units across SMSA's, and the spatial distribution of conversions in a single housing market -- New York City. The report concludes that the rental housing market in the United States appears to operating efficiently. The percentage of households renting housing units varies considerably across SMSA's. The behavior of certain variables is the basis for this variation: the ratio of house values to median incomes, household composition (average size and characteristics), and the rate of population change. Other variables are shown to affect the percentage of families renting single - family units in SMSA's. The report presents a quadripartite - logic model of tenure choice which models choice of housing mode across four dimensions. The probability that a given household will choose a given mode is shown to be a function of family size, current income, a number of permanent income and wealth proxies, a variable which captures the differential effects of costs and taxes on owners versus renters by SMSA, and population density which acts as a proxy for land cost in its effect on intensity of land usage. In addition, the report models the relative cooperative and condominium conversions during 1970 - 79 for 32 SMSA's for which HUD provided conversion data. Significant variables in explaining the relative conversions were found to be median income, the proportion of buildings with more than 20 units, the growth in small households, and a variable which expresses differential tax and cost incentives to own relative to renting. This model indicates that conversions are a market response to the demand for ownership created by tax incentives and changed household composition. Finally, an analysis of the conversion process in New York City suggests that the conversion controls in New York may have had some protective effect for residents without unduly impeding the general market adjustment of housing tenures to demand. Tables and footnotes are supplied. Appendices present a formal model of the location of tenure choice within a monocentric metropolitan area and detail an attempt to estimate the number of rented condominium units in the United States. (Author abstract modified).

PB83-122929 PC **A04**/MF **A01**
Gerontological Society, Washington, DC.
Long-Range Research Agenda for Elderly Housing and Related Services,
Paul S. Taylor. Mar 81, 63p HUD-0002282
Contract HUD-H-5204

This report identifies the most important researchable issues in the field of housing and related services for the elderly over the next 3 - 5 years. To develop the list of issues, researchers collected information on specific topics by reviewing previous research and HUD's relevant mandates and operations and by soliciting opinions from key Federal officials and representatives of special interest groups. Four researchable issues were identified: impact of neighborhood changes and

age - related adaptations, choices in housing and living environments, housing services and housing quality, and the older person and the built environment. Economic and minorityoissues were considered to transcend all other research areas. This reportPdiscusses each of the four research issues, presenting a justification and background for the issue, linking it to HUD's mandate and existing programs, and discussing the major research questions associated with the issue. These discussions direct those charged with program and policy development to additional research that is needed before program outcomes can be anticipated with any degree of certainty. The report then identifies 24 final agenda issues which delineate the most important researchable questions in the field of elderly housing and related services. Within this group, the 10 most urgent researchable issues are identified. The report concludes that HUD should place primary importance on research investigating the cost effectiveness of choices among interventions in the physical environment, provision of services, and combinations of the two, as means of supporting independent lifestyles for older persons. An outline of research suggestions, lists of preliminary and suggested new researchable issues, and the final list of issues are included. Chapter references are included.

PB83-122937 PC **A12**/MF **A01**
Gerontological Society, Washington, DC.
Research on Housing and Related Services for the Elderly: An Annotated Bibliography. Appendix B,
Paul S. Taylor, Beth J. Soldo, Elliott D. Sclar, Leon A. Pastalan, and Anna V. Brown. 01 Mar 81, 263p HUD-0002283
Contract HUD-H-5204

This volume presents 7 annotated bibliographies listing a total of about 700 sources citing research works on various aspects of housing and related services for the elderly. About 100 works focus on the various adaptations older persons make to neighborhood change and development. The current residential patterns of the elderly, the extent to which these patterns result from residential mobility, the importance of the neighborhood context for aging, and responses to different patterns of neighborhood change are also addressed. Factors related to the market for housing for the elderly are explored in works from recent Congressional hearings, the standard gerontological literature, and the Journal of Housing. Additional sources focus on the interaction of older adults with their physical environment, including the community and services, the immediate neighborhood, planned housing environments, the individual dwelling unit, and the psychological environment. Research studies on housing for elderly minorities include general works on elderly housing and housing for elderly minority group members, the integration of elderly housing into minority communities, and the preferences of elderly minorities. Additional sources focus on possible housing options which offer independent living and the services which are related to these arrangements. Further works present research on the management of traditional and alternative housing for the elderly and research on the elderly funded by HUD. Most of the sources were published in the late 1970's.

PB83-122945 PC **A04**/MF **A01**
Public Technology, Inc., Washington, DC.
Management Improvement Needs of Large Urban Governments.
1981, 69p HUD-0002286
Grant HUD-H-5387SG

This report details the tasks performed by a contractor (Public Technology, Inc.) in assisting the local government needs assessment project for HUD's Financial Management Capacity Sharing Program. Local officials were urged to concentrate on three major issues: (1) information management needs in negotiating with the private sector; (2) planning, managing, and maintaining capital infrastructure; and (3) managing energy consumption and supply at the local government level. The tasks performed included selecting and notifying local government officials to participate in a needs assessment workshop, preparing and assembling resource materials for the workshop, conducting the workshop, analyzing and confirming workshop results, and preparing problem statements on identified needs. The final tasks involved selecting and preparing three participants to HUD's national conference and participating in the national conference and analyzing results. A total of 17 local government officials were selected to participate in the needs assessment workshop; 3 of these officials attended the national conference and participated in the following workgroups: infrastructure, public private negotiations, and energy. The participants felt that not enough information was presented at the conference that covered possible solutions and that some of the problem statement summaries were inadequate. Appendices include a list of workshop participants, an annotated list of resource documents, an annotated workshop agenda, task force needs statements, a meeting summary, and needs / problem statements.

PB83-122994 PC **A04**/MF **A01**
Public Technology, Inc., Washington, DC.
Community Development Strategies Evaluation: A Local Government Perspective. A Report of the Independent Local Government Review Panel,
Donna L. Sorkin. 1981, 51p HUD-0002292
Grant HUD-H-5023RG

This report summarizes the work of the Independent Local Government Review Panel for the Community Development Strategies Evaluation, an effort by HUD to provide guidance for local officials and community leaders for the most effective expenditure of Community Development Block Grant (CDBG) funds. The HUD study is examining a wide range of CDBG program impacts in a number of neighborhoods in each of nine diverse cities. Though the emphasis is on residential rehabilitation, the study also includes other aspects of community development, such as redevelopment, public services and facilities, and citizen participation. The panel was established to provide regular input to the study; it consists of 12 local officials and representatives of 5 public interest organizations. This report covers the operation of the panel, summarizes the major discussion and results of panel reviews, outlines the panel's major interests for the next 2 years, and describes the issues that have developed as a result of the panel's efforts. The panel selected 13 study tasks and has, to some degree, dealt with 9. The study tasks include the impacts of residential rehabilitation and redevelopment, neighborhood community development strategies, the effects of community development activities on perceptions and attitudes, and citizen participation and neighborhood organizations. Each of the tasks is discussed. Panel recommendations are offered regarding the need to clarify the study's purpose and to integrate the study tasks. The panel proposes to play a direct role in assuring that the research is relevant to Federal and local policy questions. A few footnotes and tables are presented. The dates of panel meetings and comments are appended.

PB83-123026 PC **A05**/MF **A01**
Urban Inst., Washington, DC.
Deconcentration in Housing Voucher Programs: The Case for a Practical Demonstration,
James P. Zais, and Thomas Thibodeau. Jun 81, 84p HUD-0002300
Contract HUD-H-6056

This paper explores evidence on moves to areas of less racial and economic concentration by households participating in "housing voucher" programs, or those that provide payments to participating households, subject to compliance with housing - related conditions. The primary source of information used here is the Experimental Housing Allowance Program (EHAP), which tested several variations of vouchers in 12 sites between 1973 and 1980. Data from several other related experiences are also incorporated, including a recently completed evaluation of the Section 8 Existing Program. The paper treats three aspects of moves to concentrated areas in voucher programs: differences by household types, differences by program elements, and differences by form of supplementary assistance. Findings indicate that there are clear and substantial differences in moving - related costs (i.e., security deposits, costs of moving) between minority and nonminority households. Black households face costs which are two - thirds greater than nonminority households. In addition, moving - related costs as a percentage of liquid assets are two to three times greater for black and Spanish - American households compared to nonminority households. Search costs for minority households are also greater than for nonminority households. Overall, voucher programs appear to have little impact on the amount of economic deconcentration. In voucher programs, moves to economically deconcentrated areas appear to be more likely for the elderly, the nonelderly without children, and small households. Moves to areas of less racial concentration are more likely for minority than for nonminority households across most sites. Drastic changes in voucher programs, such as removing housing standards, may increase deconcentration. The study also found that of all forms of supplementary assistance, information on vacant units was the most frequently used and the most valued by participants. Based on these findings, the report recommends a demonstration using Section 8 existing payments to test the efficacy of certain factors thought likely to influence moves to deconcentrated areas and to increase understanding of such moves. Appendices suggest additional research and list programmatic changes possible for the Section 8 program. Footnotes, tables, and about 45 references are supplied.

PB83-123042 PC **A23**/MF **A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1978. Housing Characteristics for Selected Metropolitan Areas: Atlanta, Ga., Standard Metropolitan Statistical Area.
Dec 81, 529p HUD-0002302

This report presents statistics on housing and household characteristics in Atlanta, Ga., during 1978. Data were derived from the 1978 - 79 Annual Housing Survey (AHS) conducted in 15 standard metropolitan statistical areas (SMSA's). Information for the survey was collected by personal interview from April 1978 through March 1979. A series of standard tables presents data from housing units. Separate data are shown for "in central cities" and "not in central cities," as well as for the SMSA as a whole. Statistics on general housing characteristics for 1970, 1975, and 1978; on indicators of housing and neighborhood quality; on financial characteristics; and on recent mover households are given. Other tables show cross - tabulations of the indicators of housing and neighborhood quality by income, value, and gross rent. Data are given separately for black and Spanish heads of households. The 1978 AHS showed a net increase of 35,400 housing units in the Atlanta SMSA over the previous AHS (1975). Approximately 6 percent of the total housing stock in the Atlanta metropolitan area was constructed since the last survey in 1975. Offsetting these additions to the housing stock were 15,200 units lost through demolition, disaster, or other means between 1975 and 1978. Appendices describe the geographic area classifications, provide definitions and explanations of the subjects covered in the report, and discuss the source and reliability of the estimates. Tables, finding guides and maps are included. (Author abstract modified).

PB83-123067 PC **A10**/MF **A01**
Real Estate Research Corp., Chicago, IL.
Urban Infill: Its Potential As a Development Strategy,
Deborah L. Brett. Jan 82, 218p HUD-0002306
Contract HUD-H-2982

This report discusses the quality and charateristics of infill parcels (vacant land in otherwise built - up areas), their suitability for development, and the costs and savings associated with infill development. It addresses such questions as how much vacant land exists in already urbanized portions of metropolitan areas, how much of this supply is free of physical or environmental constraints, who owns infill land, and how much of the demand for developable land can be satisfied through infilling. The report also identifies actions that can be taken by local government to encourage infilling. The research findings are based on the results of three intensive case studies conducted during 1979 - 80 in the urbanized areas of Miami, Fla.; Seattle, Wash.; and Rochester, N.Y. Each case involved examination of over 150 randomly selected vacant infill parcels, interviews with their owners, and examination of 40 to 50 developed infill parcels. The report examines the rationale for promoting infill development from the perspectives of government officials at all levels, discusses the actual research findings from the three case studies, and analyzes key characteristics of individual infill parcels from the perspective of the developer / builder. Cost comparisons of infill and fringe development in the three metropolitan areas are presented. The report also presents a guide for local officials and developers carrying out infill projects. Information needed to formulate an infill strategy at the regional, municipal, or neighborhood level is examined and ways in which cities can share information on infill development opportunities with the private building industry and citizen groups are suggested. The final chapter looks at tools and incentives for encouraging investment on bypassed sites by removing regulatory obstacles, reducing risk, upgrading infrastructure, lowering land costs, or otherwise helping to make infill de-

velopment competitive with expansion at the surburan fringe. Chapter notes, footnotes, tables, diagrams, an index, and appended case study and cost comparison research methods are included.

PB83-123125 PC **A05/MF A01**
Public Technology, Inc., Washington, DC.
User Charges and Service Fees: An Information Bulletin of the Management, Finance, and Personnel Task Force,
Paul B. Downing. 1981, 79p HUD-0002312, HUD/PDR-693
Grant HUD-H-2886RG

Fiscally strapped local governments are increasingly turning towards user charges and service fees in order to generate more revenue from traditional and nontraditional sources. This bulletin discusses the application of a three - part charge that reflects the full cost of providing various municipal services to users at different locations and times. It describes a time variable / peak load quantity charge that reflects the incremental cost associated with the provision of each additional unit of service, a capacity charge that reflects the one - time capital and system costs, and a location charge that reflects the long - run cost of serving users at each location and development density. Local government applications are highlighted throughout. The bulletin also discusses such practical considerations as administrative costs, resident and employee acceptance, tax deductibility, and the incidence or equity of user charges and fees, and how they affect the design of multipart user charges; the use of charges and fees for tax - exempt property; and the relative efficiency of these charges and fees (as compared to property taxes and the usual average cost charges and fees). It concludes with a discussion of additional research needs; a listing of resource people to contact for further information, including contacts in local governments currently using user charges; and a selected bibliography of 15 references. Tables and 19 footnotes are supplied. (Author abstract modified).

PB83-123166 PC **A02/MF A01**
Abt Associates, Inc., Cambridge, MA.
Participation and Benefits in the Urban Section 8 Program: New Construction and Existing Housing. Executive Summary.
Jan 81, 18p HUD-0002316
Contract HUD-H-2902

This report summarizes the results of an investigation of participation in and benefits of the New Construction and Existing Housing components of HUD's Section 8 Housing Assistance Program. The New Construction component encourages production of privately owned, new, rental housing units. The Existing Housing component facilitates use of the privately owned rental housing stock by eligible households. Both programs attempt to help participants achieve better housing conditions and / or lower housing costs than they previously faced. Data on these programs were collected during mid - 1979 in 16 metropolitan areas through interviews with participants, questionnaires completed by project and agency staff, abstracts of program records on participants, and direct measurement of housing conditions by trained evaluators. The evaluation found that the New Construction program recipients primarily were elderly and that few minority households participated in the program. Participants in the Existing Housing program, in contrast, were generally representative of the entire eligible population. Thus, the Existing Housing program had a large proportion of nonelderly families as well as substantial minority representation. Both programs had high proportions of households with very low incomes (less than 50 percent of the local median income). The new units provided by the New Construction program provided substantial housing benefits to those in the program, but indications are that the program paid a premium above the market value of the housing made available. Participants in the Existing Housing program experienced some housing improvement, but half of the program units still did not meet the program housing standards as interpreted for the study. Both programs enable black households, particularly the elderly, to move to neighborhoods of markedly lower minority concentration. Footnotes and graphs are supplied. (Author abstract modified).

PB83-123208 PC **A09/MF A01**
Zeisel Research, Cambridge, MA.
Midrise Elevator Housing for Older People: Behavioral Criteria for Design,
John Zeisel, Polly Welch, Gayle Epp, and Stephen Demos. 1981, 179p HUD-0002320
Contract HUD-H-5037CA

The study provides a set of design guidelines to be applied to midrise apartment buildings with elevators for older people. In determining how such housing can best meet the needs of the elderly, designers differentiate between frontstage areas where residents meet other people in a more formal way and backstage areas where residents can be informal and relaxed. This environment - behavior concept can be applied to areas inside each apartment, to community areas, and to the building site. A series of performance statements describe how a basic social need interacts with a special need of older persons to define a design problem. The statements refer to a number of zones the housing site, entrance, entry lobby, community spaces, elevator core, passageways, and the apartment unit. Principal behavioral issues affecting the elderly are maintaining distinctions between insiders and outsiders, finding their way around the complex, establishing a sense of territory for the building site, controlling privacy, making display areas of the building attractive, assuring feelings of safety and security for residents, and having furnishable housing to allow for individuality. The total building concept must attend to such factors as context (adjacent buildings and streets, direction of off - site opportunities, and location of off - site barriers) and the site itself (e.g., shape, frontage, views, slope). Drawings illustrate a number of design responses for each of the zones examined. Extensive appendixes contain, a reference bibliography of 84 works, a field research summary, architectural credits, and priority research questions.

PB83-123471 PC **A06/MF A01**
Urban Systems Research and Engineering, Inc., Cambridge, MA.
Evaluation of the Urban Homesteading Demonstration Program. Volume I: Summary Assessment.
Final rept.,
Anthony J. Blackburn, Molly Beals Milliman, and Ann B. Schnare. Mar 81, 114p HUD-0002354
Contract HUD-H-2401

This first volume of the final report of the evaluation of the urban homesteading demonstration program in 23 cities summarizes the analyses of the program's operation and its impacts on the neighborhoods and the families who participated. Administrative costs of the program to local governments are estimated and recommendations are made for future improvements. The experiences of participants are analyzed and the costs and benefits accruing to them are discussed. A central chapter focuses on the net benefits of urban homesteading. The analyses support a very positive assessment of urban homesteading as a mechanism for encouraging homeownership, providing housing assistance to families, and stabilizing declining neighborhoods. It was found that the participating cities designed efficient, managable homesteading organizations; that rehabilitation repairs were generally made in a timely fashion to high standards, despite variations in approach among cities; and that cities satisfied the dual legislative program criteria by selecting families with a demonstrated need for housing as well as a capacity to carry out the repairs. Homesteader self - help accounted for a substantial portion of the repairs, performed with high quality workmanship, and homesteaders realized improved housing quality with only modest cost increases. The costs of the urban homesteading program to Federal and local government are substantial, but less than the benefits enjoyed by the homesteaders. The positive net benefits of the program reflect the creation of real value by combining rehabilitation assistance, professional support from local government, and a dedicated family. Furthermore, the socioeconomic decline of urban homesteading neighborhoods was arrested or moderated during the period of the demonstration and the rehabilitation and reoccupancy of homestead properties appears to have had a direct, positive influence on the immediately surrounding properties and an overall impact on the stabilization of the homesteading neighborhoods. Tables, charts, and footnotes are provided. Appendices list data sources and other study documentation.

PB83-123489 PC **A05/MF A01**
Urban Systems Research and Engineering, Inc., Cambridge, MA.
Evaluation of the Urban Homesteading Demonstration Program. Volume II: Local Administration of Urban Homesteading Programs.
Final rept.,
Molly Beals Milliman. Jul 80, 92p HUD-0002355
Contract HUD-H-2401

This report is the second volume of the final report of a comprehensive evaluation of the Urban Homesteading Demonstration Program undertaken in 1976 in the original 23 demonstration cities. The volume focuses on the administration of urban homesteading programs at the local level. The findings are primarily based on annual onsite interviews conducted with local officials and other actors charged with administering the program in the 23 cities. The report discusses the history and objectives of the program; local administration, property selection, and homesteader selection; and financing and managing the rehabilitation of urban homesteads. The report recommends that the process for selecting homesteaders be more closely tied to the process for selecting urban homestead properties. In addition, each homesteading program must establish appropriate property selection and homesteader financial criteria and apply these consistently throughout its program. Greater attention must be given to developing clear, comprehensive homesteading legal documents and property tax policies at the outset of a homesteading program. To ensure management control, homesteading programs should be required to maintain adequate documentation for each homestead property for which it is responsible. Finally, more encouragement should be given to cities to implement self - help homesteading programs. Tables, figures, and footnotes are provided.

PB83-123497 PC **A07/MF A01**
Urban Systems Research and Engineering, Inc., Cambridge, MA.
Evaluation of the Urban Homesteading Demonstration Program. Volume III: The Rehabilitation of Urban Homesteads.
Final rept.,
Anthony J. Blackburn. Jan 80, 136p HUD-0002356
Contract HUD-H-2401

This evaluation assessed the effectiveness of urban homesteading as a means of rehabilitating one - to four - family properties, which depends on the success of individual homesteaders in managing the planning, financing, and carrying out of needed repairs. Approximately 400 urban homestead properties in 23 demonstration cities were inspected by licensed architects at the completion of repair work; homesteaders and local program officials were interviewed. Data were collected on physical characteristics of the property, the tasks performed during rehabilitation, the division of work between homesteaders and contractors, the cost of contracted repairs, the inputs of homesteader labor by task and trade, and on the quality of workmanship and the choice of materials. The characteristics and condition of the properties before and after repairs are compared by viewing rehabilitation as a process which accepts as inputs FHA foreclosed 1 - 4 family properties in serious disrepair and which produces as outputs repaired urban homesteads meeting all the requirements of local housing codes. Findings show the properties selected for urban homesteading to be typical of central city single - family housing stock in age, but smaller than average owner - occupied dwelling units. Average repair costs estimated by HUD were about $6,500; actual costs of rehabilitation averaged approximately $12,400. Over 75 percent of the properties required work in electrical service, insulation, plumbing, finish carpentry, structural alterations, interior finishes, plaster and drywall, and site work. Homesteaders contributed an average 297 work hours and 27 percent of the total value of the rehabilitation work. Both the tasks performed and the materials chosen generally met good quality trade or professional standards of workmanship and home building. Measured by current space and service quality standards, 79 percent of the urban homesteads met the former, but only 40 percent were rated as meeting minimum plumbing and electrical service requirements. These results indicate that HUD's standards for rehabilitated properties may be overly stringent. Tabular data and survey instruments are provided.

PB83-123505 PC **A08/MF A01**
Urban Systems Research and Engineering, Inc., Cambridge, MA.

Evaluation of the Urban Homesteading Demonstration Program. Volume IV: The Urban Homesteading Experience.
Final rept.,
Anthony J. Blackburn, William G. Moss, and Ann B. Schnare. Oct 80, 162p HUD-0002357
Contract HUD-H-2401

This report constitutes the fourth volume of the Final Report of the Evaluation of the Urban Homesteading Demonstration Program, which presents findings of a 3 - year study of urban homesteaders in the 23 cities selected to participate in the demonstration. Presented is a comprehensive series of findings on the characteristics and experience of a sample of 812 urban homesteaders selected from the total of 2,101 who received properties from the local programs. An initial baseline interview was conducted within 6 months of the date on which the homesteader first occupied the property; subsequent periodic interviews were carried out at annual intervals until August 1979. In addition to the demographic and socioeconomic characteristics of the urban homesteaders, the report presents comparisons between the homesteaders and other residents of their neighborhoods, both owners and renters. Also detailed is a comprehensive set of findings on the process of urban homesteading, including personal motivation, outreach, financing, rehabilitation, and assistance from the local urban homesteading agency. The impact of urban homesteading is assessed in terms of housing and neighborhood change, changes in housing costs and quality, and estimated benefits accruing to urban homesteaders. Although most homesteaders rated both their properties and their neighborhoods favorably and noted preference for their current residence, gains in housing quality were achieved with an accompanying increase in housing costs. Appended are extensive tabular data from the baseline survey and the survey instruments.

PB83-123513 PC **A12/MF A01**
Urban Systems Research and Engineering, Inc., Cambridge, MA.
Evaluation of the Urban Homesteading Demonstration Program. Volume V: The Neighborhood Impact of Urban Homesteading.
Final rept.,
Carla I. Pedone, Patricia M. Remch, and Karl E. Case. Oct 80, 265p HUD-0002358
Contract HUD-H-2401

This report presents the findings of a 3 - year study of the 45 Urban Homesteading neighborhoods in the 23 cities selected in October 1975 to participate in the Urban Homesteading Demonstration Program. The study measures and analyzes change in Urban Homesteading neighborhoods in order to determine whether and to what extent the objectives of neighborhood stabilization and revitalization are being achieved after 4 years of program operation. The study also examines whether these objectives are being met at the expense of the existing, low - income resident population by displacing long - term inhabitants from their neighborhoods. The general dynamics of neighborhood change are examined in terms of the data derived from this analysis. The report gives a general descriptive analysis of neighborhood trends, with attention to changes in socioeconomic characteristics of the residents; in housing characteristics, including home improvement activity; and in physical neighborhood conditions and resident attitudes toward their neighborhood. Next, household mobility and home improvement, both determinants of neighborhood change, are examined. Multivariate regression techniques are used to identify factors associated with individual households' decisions to move or stay and to spend money (and how much) for home improvements. An analysis of relative property value trends in selected urban homesteading neighborhoods is examined to measure neighborhood revitalization. The report concludes that the goals of neighborhood stabilization and revitalization are being achieved in urban homesteading neighborhoods, but not through large - scale replacement of the current population. Tables, figures, footnotes, and 33 references are provided. Technical data, tables, and a description of statistical tests are appended.

PB83-123703 PC **A11/MF A01**
Skidmore, Owings and Merrill, Washington, DC.
Areawide Environmental Assessment: Guidebook.
1981, 246p HUD-0002384
Contract HUD-H-5032
Prepared in cooperation with Grefe (Richard) and Associates, Washington,DC, Bolt Beranek and Newman, Inc., Cambridge, MA, and Camp Dresser and McKee,Inc., Suitland, MD.

This technical guidance document provides information for environmental analysts, planners, and engineers charged with the preparation of areawide environmental assessment. The discussion covers the overall areawide assessment methodology, problems which will generally be encountered in applying the methodology, environmental issues typically posed at the areawide scale, data sources and analysis techniques for dealing with those issues, and documentation techniques for synthesizing and presenting the results of an assessment study. Areawide environmental assessment is compared to project - level assessment and the advantages of the former are identified. The context of this type of assessment is discussed in terms of the evolution of the areawide approach, its potential uses, its relationship to comprehensive planning, the cumulative impact in an areawide context, and fiscal, economic and urban impact assessment considerations. The assessment methodology is detailed in seven steps, ranging from determining the need and feasibility of preparing an areawide assessment, through establishing area boundaries and spacially allocating areawide alternatives, to scoping analysis, impact synthesis, evaluation, and recommendations. Assessment techniques comprise a 21 - item list, including land development suitability, volcanic and tectonic activity, water supply and quality, fire hazards, air quality, noise, energy, social conditions, and historic and archeological resources. Use of census data, maps, and remote sensing techniques for data acquisition and analysis in establishing an areawide data base are discussed. Maps, tabular and graphic data are provided. Appendices include a legal / administrative framework for areawide assessment and documentation and description of alternatives.

PB83-123711 PC **A06/MF A01**
Skidmore, Owings and Merrill, Washington, DC.
Areawide Environmental Assessment: Annotated Bibliography.
1981, 108p HUD-0002365
Contract HUD-H-5032
Prepared in cooperation with Grefe (Richard) and Associates, Washington,DC, Bolt Beranek and Newman, Inc., Cambridge, MA, and Camp Dresser and McKee,Inc., Suitland, MD.

This annotated bibliography focuses on technical methodology applicable to the environmental impact analysis of urban development at the areawide or regional scale, with particular attention to cumulative, indirect, and long - term effects. The majority of the entries date from the 1970's; a few works were published in the 1960's. The bibliography contains over 800 entries and is divided into 9 topical sections, each with specific subcategories. The first division is of a general nature, offering selections on growth projection and modeling, regional planning and analysis, and environmental information systems. The second section deals with geology and soils, followed by sections on water, plant and animal life, air and climatic features, and urban services. The final topical sections are health and safety, community values, and case examples of environmental planning and assessment. Items deemed particularly useful are identified by asterisks. Ordering information for Federal Government publications is given.

PB83-123844 PC **A13/MF A01**
Urban Systems Research and Engineering, Inc., Washington, DC.
Effects of Environmental Regulations on Housing Costs.
Final rept.,
Sarah Weinstein, Isabel Reiff, and Robert McMahon.
05 Mar 82, 281p HUD-0002423
Contract HUD-H-5234-TO4
Sponsored in part by the President's Commission on Housing, Washington, DC.

This paper documents the impact of environmental regulations on housing costs and options to lessen these costs. Regulation areas considered include coastal zone management, farmland protection, floodplain management, growth management, environmental impact reviews, noise control, sanitary wastewater management, sediment / erosion control, State comprehensive land use regulation, stormwater management, subdivision review, wetlands management, and zoning / local environmental impact reviews. The housing developer cost categories studied were administrative costs, carrying costs, compliance costs, changes in the nature of the housing product, and changes in the supply of land. Data collection was done through a literature review and interviews with representatives of national organizations; individual developers; and with Federal, State, and local staff of government agencies. The study concluded that high population growth rates in selected areas have led to increased demand, which is a major factor in escalating land prices and therefore housing costs. Secondly, the greatest housing cost savings are likely to be found in measures which directly affect the cost of land and of finishing the land. It is predicted that Federal financial support for State or local environmental activities is likely to decrease and that this will increase the reliance on developers and users to bear the cost of those activities. Finally, decreased Federal funding for construction of wastewater treatment plants and the reserve capacity for funded plants is likely to constrain the development of new housing. The paper recommends eliminating duplicative environmental permit and compliance requirements, reviewing the Clean Water Act for program changes, using innovative and alternative wastewater technologies, using HUD's local area certification procedure, and establishing flexible zoning techniques.

PB83-124040 PC **A03/MF A01**
Department of Housing and Urban Development, Washington, DC. Office of Environment and Energy.
HUD's National Environmental Policy Act (NEPA) Regulations as Applicable to Housing.
06 Jan 82, 47p HUD-0002449

This paper, intended to aid the President's Commission on Housing, raises a number of issues that affect HUD's environmental policies and procedures which are used in housing programs to meet the Department's responsibilities under the National Environmental Policy Act (NEPA). The legislation is described and other environmental authorities which HUD implements through its NEPA regulations are identified. In addition, the basic elements of the HUD environmental review process are highlighted, including the various levels of review that may be conducted and the relative volume of HUD actions that are subject to review. The major steps HUD has taken to simplify its process and to reduce the volume of HUD actions that are subject to review are summarized. The paper also specifically discusses Environmental Impact Statements (EIS's). HUD's EIS policy is reviewed, alternatives to the preparation of EIS's indicated, and the simplification of HUD's EIS procedures discussed. Additional issues are raised for the Council on Environmental Quality. The appendix contains a reprint of NEPA, an executive order, a sample review format, highlights HUD NEPA policies and procedures, and a listing of housing EIS's completed in 1981. (Author abstract modified).

PB83-124198 PC **A03/MF A01**
Housing Action Council, White Plains, NY.
Community Revitalization Bibliography.
Jul 80, 48p HUD-0002471, HUD/CPD-587

This annotated bibliography of approximately 110 entries was prepared for local officials who plan, design, and operate neighborhood revitalization and rehabilitation programs. Lenders, homeowners, investors, nonprofit housing organizations, and others interested in urban neighborhoods and rehabilitation and preservation strategies may also find it useful. Most of the publications were prepared between 1974 and 1978 in response to the 1974 Housing and Community Development Act, under which; cities obtained the means to develop programs tailored to their special needs. The publications reflect the diversity and evolving nature of rehabilitation programs and describe many successful local strategies and innovative approaches. The bibliography is divided into eight sections entitled issues and concepts in program development, program planning and administration, financing, construction, commercial revitalization, code enforcement, homesteading, and preservation of old buildings. (Author abstract modified).

PB83-124206 PC **A04/MF A01**
Housing Action Council, White Plains, NY.
Administering a Multifamily Rehabilitation Program: A Guidebook for Local Government.
Michael M. Ehrmann, Alan Gordon, Muriel Lipit, and Edward Hull. Jan 79, 57p HUD-0002472, HUD/CPD-392

This guidebook is designed to aid local officials who are interested in multifamily rehabilitation and is aimed primarily at those communities that are participating in HUD's Neighborhoods Strategy Area (NSA) program.

Basic premises underlying the guidebook are that local governments must play a determining role in the development of multifamily rehabilitation programs; successful multifamily rehabilitation must be carried out in a comprehensive, neighborhood context; and successful multifamily rehabilitation cannot take place without the full cooperation and involvement of the tenants in the affected buildings as well as the other neighborhood residents. The guide outlines in detail the need for a comprehensive strategy in dealing with multifamily rehabilitation and suggests how such a strategy can be developed and implemented. Also described are the kinds of activities involved in carrying out the rehabilitation process, with particular emphasis on staging of work, establishing priorities, and firming up financing commitments. Reasons for full citizen involvement in the development and action phases of a rehab strategy are described in detail. Possible strategies and techniques for developing this potential are outlined, with specific suggestions for programming aimed at local government officials. Finally, the guide explores the requirements for NSA participants, and offers some guidance for local officials in how to best manage this process. Charts and exhibits are included. (Author abstract modified).

PB83-124289 PC **A02**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Neighborhoods, Voluntary Associations, and Consumer Protection.
Guide to Housing Rehabilitation Programs.
Apr 79, 25p HUD/NVACP-320(4), HUD-0002576

The guide provides a summary of 22 housing rehabilitation programs administered by HUD. Summary information covers the nature of each program, eligibility requirements, and the office of contact for additional information and application forms. Programs listed include the Community Development Block Grant, the Section 312 Rehabilitation Loan, Urban Homesteading, Title I Property Improvement Loan Insurance, Section 8 Housing Rehabilitation Assistance, and Public Housing Modernization. Other programs covered are the Urban Reinvestment Task Force, Section 297 Mortgage Insurance for Multifamily Rental Housing, Section 213 Cooperative Housing Mortgage Insurance, and others. A list of all HUD field office addresses is appended.

PB83-124479 PC **A06**/MF **A01**
Central Inst. of Road Transport, Poona (India).
Bus and Crew Scheduling: Proceedings of the 3-Day Workshop Held at C.I.R.T. from 4th to 6th September 1978,
P. Sundarsanam. 1978, 124p

The report discusses the most important single factor in determining the efficiency of transport operations - in the hope of evolving certain basic ideas for adaptation throughout the industry. The workshop was fairly well attended and as many as 12 state Transport Undertakings different kinds of operating conditions have been represented. The proceeding contain the discussion and the various papers presented. The topics dealt were: Bus and Crew Scheduling for Rural Passenger Transport; Route, the Origin, Characteristics and Behavior; Break-Even Analysis; and Scheduling.

PB83-124669 PC **A04**/MF **A01**
Automotive Environmental Systems, Inc., Westminister, CA.
A Study of Emissions from Light Duty Vehicles in Los Angeles.
Final rept. Aug 81-Aug 82,
Robert A. Cassidy, and Linda S. Kingston. Sep 82, 62p EPA-460/3-82-005
Contract EPA-68-03-3023

One hundred fifty light duty vehicles from model years 1979 through 1981 were obtained from the public, in the Los Angeles and Orange County areas. These vehicles were tested as received, for exhaust emissions utilizing the 1978 Federal Test Procedure, the Highway Fuel Economy Test (HFET), and four short mode tests. Thirty-one 1981 vehicles received an evaporative emission test using the sealed housing evaporative determination (SHED) technique. Thirty of the one hundred fifty vehicles received restorative maintenance and repairs and additional testing.

PB83-124693 PC **A18**/MF **A01**
Michigan Dept. of Commerce, Lansing.
Hazardous Waste Management in the Great Lakes Region: Opportunities for Economic Development and Resource Recovery.
Sep 82, 412p NBS-GCR-82-405
Contract NB81-NADA-2063

The purpose of this study is to develop methodologies that evaluate the economic impacts associated with hazardous waste management costs and to assess the economic potential of resource recovery. The study concentrates on the states of the Great Lakes region. Two models were developed; one for the electroplating industry and the other analyzing options for solvent recovery. Both models were based on constrained economic optimization methodology. The computer model analyzing the electroplating industry compared the cost of five alternative treatment and resource recovery technologies for 24 electroplating shops in the Great Lakes region. A sensitivity analysis of the results of the electroplating model was conducted to determine what kind of financial incentives would induce greater adoption of resource recovery technologies. The model analyzing the economics of solvent recovery compared the cost of off-site disposal or incineration with off-site recovery of waste solvents and with recovery at the plant site. In order to determine the economic impact of hazardous waste management costs, a computer program for a financial impact model was developed. The study also developed a methodology to predict whether companies that generate hazardous wastes would be likely to relocate closer to treatment and disposal facilities to reduce transportation and disposal costs.

PB83-124719 PC **A07**/MF **A01**
Tennessee Valley Authority, Chattanooga. Div. of Energy Demonstrations and Technology.
Forced-Oxidation Demonstration at the TVA Widows Creek Unit 8 FGD System.
Final rept. Apr 78-Nov 81,
J. G. Patterson, G. T. Munson, R. A. Runyan, J. D. Veitch, and W. L. Wells. May 82, 144p TVA/OP/EDT-82/15, EPA-600/7-82-043

The report discusses an evaluation by TVA of forced oxidation in a 140-MW train of the Widows Creek steam plant Unit 8 venturi-spray tower limestone FGD system. Oxidation by air sparging in the agitated hold tank of both the venturi and spray tower absorber consistently produced over 95% oxidation at air rates of 2 lb atoms O/lb mole SO2 absorbed (stoichiometry of 2, or 100% excess). Oxidation only in the venturi hold tank produced less consistent results because of carryover mixing of the liquid in the two tanks. Oxidation levels above 95% permitted dewatering to over 80% solids using a thickener and rotary vacuum filter. The dewatered waste was easily handled as a solid. SO2 removal and FGD system operating characteristics were unaffected. Forced oxidation appears to be a practical method of producing a solid waste that can be disposed of in a landfill (as an alternative to pond waste disposal) for the Unit 8 FGD system.

PB83-124800 PC **A10**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
Investigation of Construction Failure of the Riley Road Interchange Ramp, East Chicago, Indiana,
N. J. Carino, H. S. Lew, W. C. Stone, R. M. Chung, and J. R. Hoblitzell. Oct 82, 224p NBSIR-82-2593
Sponsored in part by Occupational Safety and Health Administration, Washington, DC. and Federal Highway Administration, Washington, DC.

The National Bureau of Standards (NBS), at the request of the Occupational Safety and Health Administration, conducted an investigation to determine the most likely cause of the collapse of a portion of a highway ramp in East Chicago, Indiana. The accident occurred on April 15, 1982, and resulted in the death of 13 workers. A team of engineers from NBS and the Federal Highway Administration carried out an extensive field investigation, in cooperation with personnel from the Indiana Occupational Safety and Health Administration, to ascertain the conditions prior to and after the accident. In addition, the NBS performed physical tests on key components of the temporary support system used to build the ramp. A structural analysis was also performed to compute the magnitude of the forces acting in various components of the support system.

PB83-124867 PC **A02**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Metal Coil Surface Coating Industry - Background Information for Promulgated Standards.
Final rept.
Oct 82, 22p EPA-450/3-80-035B
See also PB81-123572.

Standards of performance for the control of VOC emissions from the metal coil surface coating industry are being promulgated under Section III of the Clean Air Act. This document contains a summary of public comments, EPA responses, and a discussion of differences between the proposed and promulgated standards of performance.

PB83-124875 PC **A08**/MF **A01**
TRW Environmental Engineering Div., Research Triangle Park, NC.
Control of Volatile Organic Compound Emissions from Large Petroleum Dry Cleaners.
Final rept.
Sep 82, 158p EPA-450/3-82-009
Contract EPA-68-02-3174
Errata sheet inserted.

This report provides the necessary guidance for development of regulations to limit emissions of volatile organic compounds (VOC) from large dry cleaning plants using petroleum solvents. This guidance includes emission estimates, control technologies, costs, environmental effects and enforcement for the development of reasonable available control technology.

PB83-124982 PC **A03**/MF **A01**
Geological Survey, University, AL. Water Resources Div.
Hydrologic Characteristics of Surface-Mined Land Reclaimed by Sludge Irrigation, Fulton County, Illinois.
Water-resources investigations (Final),
G. L. Patterson, R. F. Fuentes, and L. G. Toler. Aug 82, 37p USGS/WRI-82-16, USGS/WRD/WRI-82-076
Prepared in cooperation with Metropolitan Sanitary District of Greater Chicago, IL.

Analyses of water samples collected at four stream-monitoring stations, in an area surface mined for coal and being reclaimed by sludge irrigation, show the principal metals are sodium, calcium, and magnesium and principal non-metals are chloride, sulfate, and bicarbonate. Comparing yearly mean chemical concentrations shows no changing trends since reclamation began, nor are there differences between stations upstream and downstream from the site. Yearly suspended-sediment loads and discharge relations upstream and downstream from the site also show no differences. The water-table surface generally follows the irregular topography. Monthly water-level fluctuations were dependent on the surface material (mined or unmined) and proximity to surface discharge. Analyses of water samples from 70 wells within or adjacent to the reclamation site showed no differences in water quality which could be attributed to sludge or supernatant application.

PB83-125161 PC **A09**/MF **A01**
North Carolina Water Resources Research Inst., Raleigh.
Evaluation of Public Participation in the Yadkin-Pee Dee Level B River Basin Study,
Joan Wright. Jun 82, 176p UNC-WRRI-82-181, W83-00612, OWRT-B-120-NC(2)
Contract DI-14-34-0001-9126

For useful public participation (PP) in water resources planning, the public must learn how the planning process is organized and how they may participate effectively. A case study was made of the North Carolina PP effort in the Yadkin-Pee Dee Level B River Basin Study using observation, document analysis, and a series of surveys of various groups of public's and planners. This study addressed questions concerning: the appropriateness/utility of viewing PP in planning as an educational process; components of the PP effort, and relationships found between them and evidences of learning; factors shaping the PP effort; and problems/issues encountered. The results of this study indicated that, while more public involvement was associated with more public learning, no one technique was the most superior.

PB83-125245 PC **A04**/MF **A01**
Iowa State Water Resources Research Inst., Ames.

Site Evaluation, Design, Operation, and Installation of Home Sewage Systems in Iowa.
Completion rept.,
C. E. Beer. Jun 82, 67p ISWRRI-93, W83-00621, OWRT-A-064-IA(1)
Contract DI-14-34-0001-7034
Also pub. as Iowa State Univ., Ames. Engineering Research Inst. rept. no. ISU-ERI-AMES-82209.

Investigations were carried out to develop information for solving problems associated with the design, location, and maintenance of on-site waste treatment systems for dwellings. Three specific activities were undertaken. One focused on the development of information concerning the origin, description, and classification of soils, and on how the soil properties/characteristics related to proper site evaluation for optimum waste treatment. A second activity examined Iowa groundwater districts and assessed the geology and location of the water resources relative to potential pollution hazards associated with waste treatment systems. A third study area developed guidance for selecting design criteria and construction methods for on-site waste treatment systems.

PB83-125252 PC **A06**/MF **A01**
Iowa State Water Resources Research Inst., Ames.
Development of a Countywide Model Management Organization for Wastewater.
Completion rept.,
C. E. Beer, and K. M. Mancl. Jul 82, 109p ISWRRI-106, W83-00622, OWRT-A-069-IA(1)
Contract DI-14-34-0001-9017
Also pub. as Iowa State Univ., Ames. Engineering Research Inst. rept no. ISU-ERI-AMES-83054.

A model county ordinance to establish on-site wastewater management districts in Iowa counties was prepared, distributed to all 99 counties, and adopted by Guthrie County, creating a management district at Lake Panorama. Based on the acceptance, accomplishments, and few difficulties experienced at Lake Panorama, public management of on-site wastewater treatment systems is a workable, realistic alternative for rural Iowa. High density use of on-site wastewater treatment systems in a rural subdivision in Polk County was also examined. Septic systems were investigated for evidence of failure, house-to-house surveys were performed, and well-water samples were analyzed. It was concluded that septic systems can operate satisfactorily for over 20 years.

PB83-125765 PC **A07**/MF **A01**
Georgia Univ., Athens. Inst. of Government.
A Guide for Analyzing the Costs and Benefits of Municipal Annexation: With Case Study of Elberton, Georgia,
Jerry Singer. Jul 79, 128p NSF/RA-790774
Grants NSF-ISP79-08955, NSF-ISP76-24655
Prepared in cooperation with Georgia State of Community Affairs, Atlanta.

A methodology by which cities and citizens can evaluate the costs and benefits of annexation is provided. This manual includes forms and instructions for use in calculating growth trends and revenue and expenditure projections. Relevant law cases are discussed, alternative methods of annexation in compliance with Georgia law are examined, and municipal annexation in other states is considered. A cost/benefit analysis of the impact of annexation upon the city of Elberton, Georgia and upon each area proposed for annexation is included.

PB83-125815 PC **A02**/MF **A01**
Georgia Inter-Univ. Task Force.
Model Program to Assist Small and Midsized Communities with Downtown Development,
Craig Aronoff, and Brad Doss. May 79, 18p NSF/RA-790770
Grants NSF-ISP79-08955, NSF-ISP76-24655
Prepared by Georgia State Univ. Atlanta.

A project undertaken to refurbish the downtown section of Marietta, Georgia is described. Technical business expertise was provided to Marietta's merchants and merchant's association to enable them to better compete with suburban shopping centers outside of the city limits. Task forces were created to give the association improved organizational capacity and to deal with problems related to parking, membership, and facade renovation.

PB83-126003 PC **A04**/MF **A01**
Iowa Cooperative Wildlife Research Unit, Ames.
Effects of Habitat Alterations on Riparian Plant and Animal Communities in Iowa.
Final rept.,
L. B. Best, D. F. Stauffer, A. R. Geier, K. L. Varland, and J. P. Vogler. Mar 81, 72p FWS/OBS-81/26
Contract DI-14-16-0008-1174

The purpose of this study was to determine the effects of short reach stream channelization on land-use practices and the impacts of these effects on riparian plant and animal communities. Changes in land use were relatively minor with small declines in herbaceous fields and pastures and increases in cultivated crops. Bird and small mammal use of riparian land was closely correlated to the availability of forests and woodlands. Number of birds increased with increasing availability of timber. Small mammal populations, on the other hand, tended to decrease as herbaceous cover declined and woodlands increased.

PB83-126110 PC **A05**/MF **A01**
Ohio State Univ., Columbus. ElectroScience Lab.
Development of an Improved Radar-Based Underground Pipe Locator.
Annual rept. Jan 81-Mar 82,
Jonathan D. Young. Mar 82, 94p ESL-529623-5, GRI-80/0127
Contract GRI-5080-350-0402

The Terrascan pipe locator unit utilizes impulse radar technology in a one-man portable package to determine the location, depth, and direction of both plastic and metal pipes. In 1978, twenty prototypes were built, demonstrated and tested by several utilities across the United States. One common user comment was that the instrument reliability and utility would be improved if its operation were simplified so that it was easier to set up, and easier to learn to use. If such improvements can be made, the Terrascan promises to be an important new device for pipe location (particularly plastic).

PB83-126557 PC **A06**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Compilation of Air Pollutant Emission Factors, Third Edition, Supplement 13 (Including Supplements 1-7).
Aug 82, 120p AP-42-SUPPL-13
See also Supplement 12, PB82-101213.

In this Supplement for AP-42, new or revised emissions data are presented for Bituminous and Subbituminous Coal Combustion; Fuel Oil Combustion; Natural Gas Combustion; Liquefied Petroleum Gas Combustion; Wood Waste Combustion In Boilers; Lignite Combustion; Stationary Large Bore Diesel and Dual Fuel Engines; Automobile and Light Duty Truck Surface Coating; Pressure Sensitive Tapes and Labels; Metal Coil Surface Coating; Textile Fabric Printing; Sodium Carbonate; Emulsion Styrene-Butadiene Copolymers; Storage Battery Production; and Metallic Minerals Processing.

see individual report for order number and price
Atlantic Environmental Associates, Inc., Waltham, MA.
Regulations and Non-Regulatory Revisions to State Implementation Plan.
Oct 81,57 issues

This document has been produced in compliance with Section 110(h) of the Clean Air Act, as amended in 1977, which mandates periodic publication of State Implementation Plan (SIP) requirements. The first section of the document comprises the Federally approved SIP regulations. It consists of the EPA-approved State and/or local air pollution control regulations cited by reference in the Federal Register; regulations promulgated as of August 1, 1981 have been included in this document. The present compilation constitutes an update of a previous documentation of regulations as of July 1, 1979. State and/or local air quality regulations which have not been Federally approved as of August 1, 1981, are not included. However, any omissions of regulations from this document in no way affects the ability of the respective Federal, State, or local agencies to enforce such regulations. A summary sheet of the regulatory revisions is provided to give a quick historical assessment of the changes. The second part of the document contains the text of non-regulatory SIP revisions approved by EPA up to August 1, 1981, excluding notices or certifications of public hearings and technical support data. A complete tabulation of these revisions is also provided. Other individual documents are also available:

EPA-450/2-81/020. Alabama. Oct 81, 126p PC A07, MF A01 **PB83-126748**
EPA-450/2-81/021. Alaska. Oct 81, 68p PC A04, MF A01 **PB83-126755**
EPA-450/2-81/071. American Samoa. Oct 81, 24p PC A02, MF A01 **PB83-126763**
EPA-450/2-81/022. Arizona. Oct 81, 250p PC A11, MF A01 **PB83-126771**
EPA-450/2-81/023. Arkansas. Oct 81, 67p PC A04, MF A01 **PB83-126789**
EPA-450/2-81/024-03. California-Butte County. Oct 81, 64p PC A04, MF A01 **PB83-126797**
EPA-450/2-81/024-10. California-Great Basin Unified. Oct 81, 73p PC A04, MF A01 **PB83-126805**
EPA-450/2-81/024-34. California-Siskiyou County. Oct 81, 73p PC A04, MF A01 **PB83-126813**
EPA-450/2-81/025. Colorado. Oct 81, 151p PC A08, MF A01 **PB83-126821**
EPA-450/2-81/026. Connecticut. Oct 81, p146 PC A07, MF A01 **PB83-126839**
EPA-450/2-81/027. Delaware. Oct 81, 100p PC A05, MF A01 **PB83-126847**
EPA-450/2-81/028. District of Columbia. Oct 81, 35p PC A03, MF A01 **PB83-126854**
EPA-450/2-81/029. Florida. Oct 81, 107p PC A06, MF A01 **PB83-126862**
EPA-450/2-81/030. Georgia. Oct 81, 108p PC A06, MF A01 **PB83-126870**
EPA-450/2-81/072. Guam. Oct 81, 47p PC A03, MF A01 **PB83-126888**
EPA-450/2-81/031. Hawaii. Oct 81, 41p PC A03, MF A01 **PB83-126896**
EPA-450/2-81/032. Idaho. Oct 81, 109p PC A06, MF A01 **PB83-126904**
EPA-450/2-81/033. Illinois. Oct 81, 235p PC A11, MF A01 **PB83-126912**
EPA-450/2-81/034. Indiana. Oct 81, 80p PC A05, MF A01 **PB83-126920**
EPA-450/2-81/035. Iowa. Oct 81, 69p PC A04, MF A01 **PB83-126938**
EPA-450/2-81/036. Kansas. Oct 81, 122p PC A06, MF A01 **PB83-126946**
EPA-450/2-81/037. Kentucky. Oct 81, 715p PC A99, MF A01 **PB83-126953**
EPA-450/2-81/038. Louisiana. Oct 81, 93p PC A05, MF A01 **PB83-126961**
EPA-450/2-81/039. Maine. Oct 81, 54p PC A04, MF A01 **PB83-126979**
EPA-450/2-81/040. Maryland. Oct 81, 238p PC A11, MF A01 **PB83-126987**
EPA-450/2-81/041. Massachusetts. Oct 81, 119p PC A06, MF A01 **PB83-126995**
EPA-450/2-81/042. Michigan. Oct 81, 160p PC A08, MF A01 **PB83-127001**
EPA-450/2-81/043. Minnesota. Oct 81, 57p PC A04, MF A01 **PB83-127019**
EPA-450/2-81/044. Mississippi. Oct 81, 70p PC A04, MF A01 **PB83-127027**
EPA-450/2-81/045. Missouri. Oct 81, 319p PC A14, MF A01 **PB83-127035**
EPA-450/2-81/046. Montana. Oct 81, 53p PC A04, MF A01 **PB83-127043**
EPA-450/2-81/047. Nebraska. Oct 81, 94p PC A05, MF A01 **PB83-127050**
EPA-450/2-81/048. Nevada. Oct 81, 229p PC A11, MF A01 **PB83-127068**
EPA-450/2-81/049. New Hampshire. Oct 81, 117p PC A06, MF A01 **PB83-127076**
EPA-450/2-81/050. New Jersey. Oct 81, 165p PC A08, MF A01 **PB83-127084**
EPA-450/2-81/051. New Mexico. Oct 81, 100p PC A05, MF A01 **PB83-127092**
EPA-450/2-81/052. New York. Oct 81, 138p PC A07, MF A01 **PB83-127100**
EPA-450/2-81/053. North Carolina. Oct 81, 135p PC A07, MF A01 **PB83-127118**
EPA-450/2-81/054. North Dakota. Oct 81, 309p PC A14, MF A01 **PB83-127126**
EPA-450/2-81/055. Ohio. Oct 81, 369p PC A16, MF A01 **PB83-127134**
EPA-450/2-81/056. Oklahoma. Oct 81, 124p PC A06, MF A01 **PB83-127142**
EPA-450/2-81/057. Oregon. Oct 81, 327p PC A15, MF A01 **PB83-127159**
EPA-450/2-81/058. Pennsylvania. Oct 81, 266p PC A12, MF A01 **PB83-127167**
EPA-450/2-81/073. Puerto Rico. Oct 81, 140p PC A07, MF A01 **PB83-127175**
EPA-450/2-81/059. Rhode Island. Oct 81, 73p PC A04, MF A01 **PB83-127183**

EPA-450/2-81/060. South Carolina. Oct 81, 81p PC A05, MF A01 **PB83-127191**
EPA-450/2-81-061. South Dakota. Oct 81, 74p PC A04, MF A01 **PB83-127209**
EPA-450/2-81/062. Tennessee. Oct 81, 389p PC A17, MF A01 **PB83-127217**
EPA-450/2-81/063. Texas. Oct 81, 136p PC A07, MF A01 **PB83-127225**
EPA-450/2-81/064. Utah. Oct 81, 79p PC A05, MF A01 **PB83-127233**
EPA-450/2-81/065. Vermont. Oct 81, 53p PC A04, MF A01 **PB83-127241**
EPA-450/2-81/074. U.S. Virgin Islands. Oct 81, 30p PC A03, MF 01 **PB83-127258**
EPA-450/2-81/066. Virginia. Oct 81, 218p PC A10, MF A01 **PB83-127266**
EPA-450/2-81/067. Washington. Oct 81, 340p PC A15, MF A01 **PB83-127274**
EPA-450/2-81/068. West Virginia. Oct 81, 170p PC A08, MF A01 **PB83-127282**
EPA-450/2-81/069. Wisconsin. Oct 81, 151p PC A08, MF A01 **PB83-127290**
EPA-450/2-81/070. Wyoming. Oct 81, 62p PC A04, MF A01 **PB83-127308**

PB83-127480 PC **A99**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Control Techniques for Particulate Emissions from Stationary Sources - Volume 2.
Final rept.
Sep 82, 670p EPA-450/3-81-005B
See also Volume 1, PB83-127498, and PB82-263799.

Control Techniques for Particulate Emissions from Stationary Sources Volumes 1 and 2 present recent developments of control techniques which have become available since preparation of an earlier document entitled Control Techniques for Particulate Air Pollutants (AP-51). Volume 2 of this document presents available information on major sources of particulate emissions and demonstrated techniques used to control emissions from these sources. Particulate size data for uncontrolled and controlled sources are included for many sources. Additionally, industrial process fugitive emission data and fugitive emission data are presented for some emission sources.

PB83-127498 PC **A20**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Control Techniques for Particulate Emissions from Stationary Sources - Volume 1.
Final rept.
Sep 82, 459p EPA-450/3-81-005A
See also Volume 2, PB83-127480.

Control Techniques for Particulate Emissions from Stationary Sources Volume 1 and 2 present recent developments of control techniques which have become available since preparation of an earlier document entitled Control Techniques for Particulate Air Pollutants (AP-51). Volume 1 of this document presents available data on characterization; sampling methods and analytical techniques for particulate emissions; particle behavior and characteristics; types of particulate control systems, their operating principles, design, operation, and maintenance; costs and environmental consideration of particulate control techniques; and emerging technologies for particulate removal systems. A major portion of Volume 1 presents information to quantify particulate removal efficiencies by particulate size for the differing types of particulate removal systems.

PB83-127712 PC **A22**/MF **A01**
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Air Quality Data - 1975 Annual Statistics Including Summaries with Reference to Standards.
May 77, 525p EPA-450/2-77-002
See also PB-282212.

This report presents comprehensive summaries of data produced by the nation's ambient air quality monitoring activities for 1975. The data are summarized in two formats: frequency distribution (Part I) and status of data with reference to standards (Part II). These summaries are based on data acquired through extensive monitoring activities conducted by Federal, state, and local pollution control agencies and submitted to the U.S. Environmental Protection Agency's National Aerometric Data Bank. Information is provided on the six pollutants for which National Ambient Air Quality Standards have been set: total suspended particulates, carbon monoxide, sulfur dioxide, nitrogen dioxide, total hydrocarbons, and total oxidants. Part II does not include a section for hydrocarbon data since the hydrocarbon standard was established as a guide for meeting the oxidant standard and monitoring for hydrocarbons is not currently required.

PB83-128025 PC **A04**/MF **A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg.
Biological and Economic Impact ofStream Alteration in the Virginia Piedmont.
Final rept.,
James B. Whelan, O. Eugene Maughan, Leonard A. Shabman, and Morris Mauney. Mar 81, 61p FWS/OBS-81/33
Contract DI-14-16-0008-1146

This study was designed to determine the effects of stream channelization on the aquatic/riparian fish and wildlife resources of selected warmwater streams in the Virginia Piedmont. In addition, changing land-use patterns and the economic costs and benefits of the channelization projects were analyzed. Fish species diversity among channelized and unchannelized streams differed only slightly; however, evenness diversity for fish communities was lower in channelized streams. During winter, bird species diversity among channelized stream sites was not significantly different, but breeding bird species richness and diversity increased with age since channelization.

PB83-128124 PC **A04**/MF **A01**
Fish and Wildlife Service, Kearneysville, WV. Eastern Energy and Land Use Team.
Management of Cooling Ponds and Lakes for Fish and Wildlife - A Guidance Manual.
Final rept.,
James P. Clugston, D. Hugh Barwick, and T. T. Fendley. 30 Sep 82, 73p FWS/OBS-82/36
Prepared in cooperation with South Carolina Agricultural Experiment Station, Clemson, and Southeast Reservoir Investigations, Clemson, SC.

Manual highlights techniques to be used to enhance fish and wildlife communities at planned and existing cooling lakes. Relevant management theory and techniques for unaltered systems are combined with information on the effects of power plant operations on animal life to produce guidelines for optimum use of aquatic and terrestrial habitats created. Management options are provided to protect and provide refuge for some species and to encourage the production of other species for recreational use. This manual is divided into three major sections; the first considers construction practices and physical constraints of cooling systems. The second contains recommendations (primarily fishing management) for completed cooling lakes and the third is devoted to aquatic, riparian, and terrestrial wildlife. A special section highlights power plant-induced problems not identified earlier that may affect management strategies.

PB83-128181 PC **A24**/MF **A01**
Missouri Univ.-Rolla.
Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels Held in Denver, Colorado on October 26-30, 1981.
Rept. for Mar 81-Mar 82,
F. A. Ayer, and N. S. Jones. Sep 82, 558p EPA-600/9-82-017
Contract EPA-68-02-3170
See also PB83-128199 through PB83-128488 and Volume 5, PB81-245045.

The document summarizes or contains an abstract of each presentation made at the EPA-sponsored symposium, October 26-30, 1981, in Denver, CO. The symposium provided a forum for the exchange of ideas and for discussion of environmentally related information on coal gasification and liquefaction. Process developers and users, research scientists, and government officials reported on results achieved from research projects, synfuels process development, interagency programs, control technology evaluation, and regulatory actions. The program included sessions on environmental source test and evaluation results for gasification, indirect liquefaction, and direct liquefaction processes, and water-, air-solid-waste-, multimedia-, and product-related environmental considerations. Approximately 215 participants attended the 5-day symposium.

PB83-128199
(Order as PB83-128181, PC **A24**/MF **A01**)
Radian Corp., Austin, TX.
Characterization of Process Liquids and Organic Condensates from the Lurgi Coal Gasification Plant at Kosovo, Yugoslavia,
Karl J. Bombaugh, Kenneth W. Lee, Ronald G. Oldham, and Slobodan Kapor. Sep 82, 21p
Prepared in cooperation with Institut za Primenu Nuklearne Energy, Belgrade (Yugoslavia).
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p2-21 Oct 81.

No abstract available.

PB83-128207
(Order as PB83-128181, PC **A24**/MF **A01**)
Radian Corp., Austin, TX.
Application of Kosovo (Lurgi) Gasification Plant Test Results to Pollution Control Process Designs,
G. C. Page, W. E. Corbett, and R. A. Magee. Sep 82, 19p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p23-41 Oct 81.

No abstract available.

PB83-128215
(Order as PB83-128181, PC **A24**/MF **A01**)
Gesellschaft fuer Kohle-Technologie m.b.H., Essen (Germany, F.R.).
Environmental Aspects of the GKT Coal Gasification Process,
R. E. Wetzel, K. W. Crawford, and W. C. Yee. Sep 82, 15p
Prepared in cooperation with TRW Systems and Energy, Redondo Beach, CA. and Tennessee Valley Authority, Chattanooga, TN.
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p42-56 Oct 81.

No abstract available.

PB83-128223
(Order as PB83-128181, PC **A24**/MF **A01**)
Radian Corp., Austin, TX.
Source Test of the Texaco Gasification Process Located at Oberhausen-Holten, West Germany,
Robert G. Wetherold, Robert M. Mann, John Morgan, and William Yee. Sep 82, 9p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p57-65 Oct 81.

No abstract available.

PB83-128231
(Order as PB83-128181, PC **A24**/MF **A01**)
Riley Stoker Corp., Worcester, MA.
Source Test and Evaluation of a Riley Gas Producer Firing North Dakota Lignite,
William P. Earley, Fred L. Jones, M. R. Fuchs, and V. A. Kolesh. Sep 82, 28p
Prepared in cooperation with American Natural Service Company, Detroit, MI. and Radian Stoker Corp., Worcester, MA.
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p66-93 Oct 81.

No abstract available.

PB83-128249
(Order as PB83-128181, PC **A24**/MF **A01**)
Exxon Research and Engineering Co., Florham Park, NJ.
Environmental Program and Plans for the EDS Coal Liquefaction Project,
Richard L. Thomas. Sep 82, 12p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p95-106 Oct 81.

No abstract available.

PB83-128272
(Order as PB83-128181, PC **A24**/MF **A01**)
Department of Energy, Washington, DC.

Coal Conversion Wastewater Treatment/Reuse - An Overview,
F. E. Witmer. Sep 82, 20p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p150-169 Oct 81.

No abstract available.

PB83-128298
(Order as PB83-128181, PC **A24**/MF **A01**)
North Carolina Univ. at Chapel Hill. Dept. of Environmental Sciences and Engineering.
Treatment of Wastewater from a Fixed-Bed Atmospheric Coal Gasifier,
Philip C. Singer, and Eli Miller. Sep 82, 17p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p186-202 Oct 81.

No abstract available.

PB83-128306
(Order as PB83-128181, PC **A24**/MF **A01**)
Zimpro, Inc., Rothschild, WI.
Treatment of Fossil Fuel Derived Wastewaters with Powdered Activated Carbon/Activated Sludge Technology,
R. B. Ely, and C. L. Berndt. Sep 82, 15p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p203-217 Oct 81.

No abstract available.

PB83-128314
(Order as PB83-128181, PC **A24**/MF, **A01**)
North Carolina State Univ. at Raleigh.
Land Treatment of Coal Conversion Wastewaters,
R. C. Sims, and M. R. Overcash. Sep 82, 13p
Included in Proceedings of Symposium on Enviornmental Aspects of Fuel Conversion on Coal-Based Synfuels, p218-231 Oct 81.

No abstract available.

PB83-128322
(Order as PB83-128181, PC **A24**/MF **A01**)
Missouri Univ.-Rolla.
Removal of Acid Gases and Other Contaminantes from Coal Gas Using Refrigerated Methanol,
J. K. Ferrell, R. M. Kelly, R. W. Rousseau, and R. M. Felder. Sep 82, 24p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p232-255 Oct 81.

No abstract available.

PB83-128330
(Order as PB83-128181, PC **A24**/MF **A01**)
Industrial Environmental Research Lab., Research Triangle Park, NC.
Advanced Techniques for Flue Gas Desulfurization,
Charles C. Masser, Theodore G. Brna, and Michael A. Maxwell. Sep 82, 26p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p256-281 Oct 81.

No abstract available.

PB83-128355
(Order as PB83-128181, PC **A24**/MF **A01**)
Radian Corp., Austin, TX.
Gaseous Fugitive Emissions from Synfuels Production - Sources and Controls,
R. L. Honerkamp. Sep 82, 20p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p293-312 Oct 81.

No abstract available.

PB83-128363
(Order as PB83-128181, PC **A24**/MF **A01**)
Fluor Engineers and Constructors, Inc., Irvine, CA.
Control Systems for Air Emissions from Coal Gasification,
Sid Thomson. Sep 82, 15p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p313-327 Oct 81.

No abstract available.

PB83-128371
(Order as PB83-128181, PC **A24**/MF **A01**)
Oak Ridge National Lab., TN.
Health Effects Bioassay Results from Coal Conversion Solid Wastes,
M. P. Maskarinec, F. W. Larimer, J. L. Epler, and C. W. Francis. Sep 82, 12p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p329-340 Oct 81.

No abstract available.

PB83-128389
(Order as PB83-128181, PC **A24**/MF **A01**)
Radian Corp., Austin, TX.
A Comparison of RCRA Leachates of Solid Wastes from Coal-Fired Utilities and Low- and Medium-BTU Gasification Processes,
Michael R. Fuchs, Donnie L. Heinrich, Larry J. Holcombe, and Kishore T. Ajmera. Sep 82, 17p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p341-357 Oct 81.

No abstract available.

PB83-128397
(Order as PB83-128181, PC **A24**/MF **A01**)
TRW Environmental Engineering Div., Research Triangle Park, NC.
Characterization of Solid Wastes from Indirect Liquefaction Facilities,
Cora A. Hunter, Kar Y. Yu, and Kimm W. Crawford. Sep 82, 22p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p358-379 Oct 81.

No abstract available.

PB83-128405
(Order as PB83-128181, PC **A24**/MF **A01**)
Pittsburgh Univ., PA.
Ash/Slag Residuals and Wastewater Treatment Plant Sludges from Synfuels Facilities: Characterizations and Implications for Disposal,
Ronald D. Neufeld, Georg Keleti, J. Bern, C. Moretti, and S. Wallach. Sep 82, 17p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Synfuels, p380-399 Oct 81.

No abstract available.

PB83-128413
(Order as PB83-128181, PC **A24**/MF **A01**)
Industrial Environmental Research Lab., Research Triangle Park, NC.
Comparison of Environmental Design Aspects of Some Lurgi-Based Synfuels Plants,
Milton R. Beychok, and William J. Rhodes. Sep 82, 21p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p400-420 Oct 81.

No abstract available.

PB83-128462
(Order as PB83-128181, PC **A24**/MF **01**)
Industrial Environmental Research Lab., Research Triangle Park, NC.
Comparative Testing of Emissions from Combustion of Synthetic and Petroleum Fuels,
W. Gene Tucker, and Joseph A. McSorley. Sep 82, 14p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p509-523 Oct 81.

No abstract available.

PB83-128470
(Order as PB83-128181, PC **A24**/MF **A01**)
Hittman Associates, Inc., Columbia, MD.
Problems Associated with the Analysis of Synfuels Product, Process, and Wastewater Streams,
H. C. Higman, D. K. Rohrbaugh, R. H. Colleton, and R. A. Auel. Sep 82, 11p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p524-534 Oct 81.

No abstract available.

PB83-128488
(Order as PB83-128181, PC **A24**/MF **A01**)
Carnegie-Mellon Univ., Pittsburgh, PA. Dept. of Civil Engineering.
Solvent Extraction Processing for Coal Conversion Wastewaters,
James R. Campell, Richard G. Luthy, and Manuel J. T. Corrondo. Sep 82, 10p
Prepared in cooperation with New University of Lisbon (Portugal).
Included in Proceedings of Symposium on Enviornmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p535-544 Oct 81.

No abstract available.

PB83-130062 Not available NTIS
Environmental Sciences Research Lab., Research Triangle Park, NC.
Visibility and Aerosol Composition in Houston, Texas.
Journal article,
Thomas G. Dzubay, Robert K. Stevens, Charles W. Lewis, Don H. Hern, and William J. Courtney. c1982, 15p EPA-600/J-81-413
Pub. in Environmental Science and Technology 16, n8 p514-524 1982.

A field study was conducted in Houston, Texas to determine relationships between light extinction coefficients and aerosol mass and composition.

PB83-853556 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Shoreline Erosion. 1974-November, 1982 (Citations from Oceanic Abstracts).
Rept. for 1974-Nov 82.
Nov 82, 230p
Supersedes PB82-860370.Prepared in cooperation with Cambridge Scientific Abstracts, Washington, DC.

This bibliography contains citations concerning the erosion of shoreline and shoreline structures along with associated stabilization and management procedures. Structures include berms, breakwaters, jetties, sewer outlets and harbor or recreational facilities. Shoreline includes coastal rock, gravel inlets, shoals and dunes. While not emphasized in this bibliography, some citations refer to beach and sand mobility during storm surges and sediment transport by currents. The citations are general studies or models of the erosion process and specific studies for identified harbors or portions of the shoreline. Stabilization and management procedures identify techniques and programs for coastal engineering, coastal management and planning, and some regulatory procedures. (This updated bibliography contains 255 citations, 10 of which are new entries to the previous edition.)

PB83-853952 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Particle Collection: Methods and Applications. June, 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for Jun 70-Nov 82.
Nov 82, 65p
Supersedes PB80-859259.

This bibliography contains citations concerning the design and applications of particle collection devices. The collection processes and types of particles collected are discussed. Mathematical modeling for determining collection efficiency are also considered.

(This updated bibliography contains 59 citations, 13 of which are new entries to the previous edition.)

PB83-853978 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Air Filtration and Purification. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 237p
Supersedes PB81-853558.

This bibliography contains citations concerning the removal of particulate matter and the control of toxic vapors in industry as well as large urban complexes such as apartment buildings of office space. Development and testing of devices to meet federal clean-air regulations are included. Concern for domestic applications is also discussed. (This updated bibliography contains 170 citations, 94 of which are new entries to the previous edition.)

PB83-854174 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Systems Analysis / Operations Research Applied to Transportation Systems. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 113p
Supersedes PB81-851008.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning the application of systems analysis and operations research to surface, air, and space transportation systems for both passengers and materials. Transportation related energy problems, energy consumption, and energy policies and regulations are emphasized. Transportation management systems are also included. (This updated bibliography contains 92 citations, 35 of which are new entries to the previous edition.)

PB83-854182 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Systems Analysis / Operations Research Applied to Transportation Systems. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 97p
Supersedes PB81-851016.

This bibliography contains citations concerning the application of systems analysis and operation research to surface, air, and space transportation systems for both passengers and materials. Transportation systems relative to such areas as civil engineering, cargo loading operations, engineering education, computerized management information systems and urban emergency services are presented. (This updated bibliography contains 103 citations, 50 of which are new entries to the previous edition.)

PB83-854851 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Hydrogen Chloride Air Pollution. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 91p
Supersedes PB81-853541.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning hydrogen chloride air pollutants and their effects on human, animal, and plant life. Instrumentation for the detection of hydrogen chloride and control techniques to limit their emission are discussed. (This updated bibliography contains 70 citations, 18 of which are new entries to the previous edition.)

13C. Construction Equipment Materials, and Supplies

PATENT-4 330 632 Not available NTIS
Department of the Navy, Washington, DC.
Lightweight Concrete Using Polymer Filled Aggregate for Ocean Applications.
Patent,
Harvey H. Haynes, and Robert D. Rail. Filed 24 Dec 80, patented 18 May 82, 6p AD-D009 726/1, PAT-APPL-6-219 689
Supersedes PAT-APPL-6-219 689, AD-D008 128.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A structural grade lightweight concrete that is especially suited for ocean applications. The lightweight concrete uses regular lightweight aggregate particles that have been modified by filling the voids within the particles with a polymeric material. The polymer-filled aggregate particles are then bonded together using a cementitious or binder material to form concrete. Typically Portland cement is used as the binder to produce a lightweight concrete for construction of ocean structures. (Author)

PB83-116210 PC **A02**/MF **A01**
University of Strathclyde, Glasgow (Scotland). Dept. of Architecture and Building Science.
An Investigation on Creep in Punched Metal Plate Connectored Joints.
Occasional paper,
Suresh Gajjar. Feb 80, 14p OP-80/2

This report describes a study of the behavior of punched metal plate connectored joints of softwood members under a medium term loading. Initially preliminary tests on joints were carried out to investigate the moment-rotation relationship, using dial gauges to record deflexions. The use of dial gauges presented some difficulty with regard to the noting of the reading at various load levels. In addition with increasing loads it became more difficult to take a notable reading due to the increasing time taken for the dials to settle. Hence this behavior possibly indicates that punched metal plate connectored timber joints creep under constant load.

PB83-121665 PC **A99**/MF **A01**
National Bureau of Standards, Washington, DC.
Construction Materials for Coal Conversion: Performance and Properties Data,
Helen M. Ondik, Bruce W. Christ, and Alvin Perloff.
Sep 82, 826p NBS-SP-642,
Library of Congress catalog card no. 82-600610. Sponsored in part by Department of Energy, Washington, DC. Office of Fossil Energy.

This book provides a central source of materials information needed for the fossil fuel industry. Data have been collected and evaluated from Department of Energy-sponsored projects. The focus is on construction materials for coal gasification use. The book is organized so that the information is given both with respect to the various component areas of a coal gasification plant and with respect to the properties or possible failure mechanisms, e.g., corrosion, erosion, mechanical properties, and physical properties.

PB83-121806 PC **A05**/MF **A01**
Western Technologies, Inc., Phoenix, AZ.
Chemical and Physical Properties of Asphalt-Rubber Mixtures. Phase III: Summary.
Final rept. Jun 78-Apr 82,
J. C. Rosner, and J. G. Chehovits. Jun 82, 92p
FHWA/AZ-82/159
See also Volume 1, PB83-121814. Sponsored in part by Arizona Dept. of Transportation, Phoenix.
Also available in set of 6 reports PC E99, PB83-121798.

An extensive statistically designed laboratory investigation which had objectives of evaluating effects of asphalt-rubber components on mixture properties, effects of diluent on mixture properties, effects of temperature on mixture properties, applicability of several test procedures for asphalt-rubber mixtures, and differences between field and lab produced asphalt-rubber mixtures was performed. Asphalt-rubber materials formulated with six rubber types from two different production processes, four rubber concentrations, four asphalts and four diluent concentrations were produced and tested. Field produced mixtures were obtained from experimental asphalt-rubber field projects in Arizona. Testing procedures included absolute viscosity, Schweyer rheometer, sliding plate microviscometer, force-ductility, and viscosity during mixing.

PB83-121814 PC **A99**/MF **A01**
Western Technologies, Inc., Phoenix, AZ.
Chemical and Physical Properties of Asphalt-Rubber Mixtures. Phase III: Volume 1. Effects of Rubber Type, Concentration, and Asphalt.
Final rept. Jun 78-Apr 82,
J. C. Rosner, and J. G. Chehovits. Jun 82, 620p
FHWA/AZ-82/159/1
See also PB83-121806 and Volume 2, PB83-121822. Sponsored in part by Department of Transportation, Phoenix.
Also available in set of 6 reports PC E99, PB83-121798.

This study had the objectives of (1) evaluating the effects of major components, rubber and asphalt, on physical properties of asphalt-rubber mixtures, and (2) evaluating the feasibility of using testing procedures studied for specifying asphalt-rubber mixtures. Forty-eight different asphalt-rubber mixtures formulated with six different rubber types at four concentrations with two asphalts were tested. Testing procedures utilized included absolute viscosity at 140F, Schweyer Rheometer and force-ductility at 39.2F, sliding plate microviscometer at 32.0F, and viscosity by the Torque-Fork and Haake viscometer during mixing at 375F. All mixtures were produced in a Torque-Fork mixer at 375F using a 1 hour mixing duration. A total of 31 measured or calculated parameters are reported and discussed.

PB83-121822 PC **A06**/MF **A01**
Western Technologies, Inc., Phoenix, AZ.
Chemical and Physical Properties of Asphalt-Rubber Mixtures. Phase III: Volume 2. Effects of Asphalt.
Final rept. Jun 78-Apr 82,
J. C. Rosner, and J. G. Chehovits. Jun 82, 111p
FHWA/AZ-82/159/2
See also Volume 1, PB83-121814 and Volume 3, PB83-121830. Sponsored in part by Arizona Dept. of Transportation, Phoenix.
Also available in set of 6 reports PC E99, PB83-121798.

This study had the objective of evaluating the effects of asphalt characteristics on physical properties of asphalt-rubber mixtures. Sixteen different asphalt-rubber mixtures formulated with 2 different asphalts and additions of extender oil (making a total of 4 different binders), and 2 types of granulated reclaimed rubber at 20 and 25 percent concentrations were studied. Testing procedures utilized included absolute viscosity at 140F, Schweyer Rheometer and force-ductility at 39.2F, and viscosity during mixing by the Torque-Fork and Haake viscometer. All mixtures were produced in the Torque-Fork mixer at 375F using a 1 hour mixing duration. A total of 17 measured or calculated parameters are reported and discussed.

PB83-121830 PC **A07**/MF **A01**
Western Technologies, Inc., Phoenix, AZ.
Chemical and Physical Properties of Asphalt-Rubber Mixtures. Phase III. Volume 3. Effects of Diluent.
Final rept. Jun 78-Apr 82,
J. C. Rosner, and J. G. Chehovits. Jun 82, 136p
FHWA/AZ-82/159/3
See also Volume 2, PB83-121822 and Volume 4, PB83-121848. Sponsored in part by Arizona Dept. of Transportation, Phoenix.
Also available in set of 6 reports PC E99, PB83-121798.

This study had the objective of evaluating the effects of diluent additions and curing time after diluent addition on physical properties of asphalt-rubber mixtures. A single asphalt-rubber mixture composed of AR1000 asphalt and 25 percent Atlos TPO44 rubber was studied. Four different percentages of diluent (Kerosene) and five different curing times at 140F were considered. Testing procedures utilized included ring and ball softening point, Schweyer Rheometer and force-ductility at 39.2F, and viscosity during mixing at 375F by Torque-Fork and Haake viscometer. A total of 17 measured or calculated parameters are reported and discussed.

PB83-121848 PC **A05**/MF **A01**
Western Technologies, Inc., Phoenix, AZ.

Chemical and Physical Properties of Asphalt-Rubber Mixtures. Phase III: Volume 4. Physical Properties of Field-Mixed Asphalt-Rubber Mixtures and Comparison of Lab. and Field-Mixed Asphalt Rubbers.
Final rept. Jun 78-Apr 82,
J. C. Rosner, and J. G. Chehovits. Jun 82, 93p
FHWA/AZ-82/159/4
See also Volume 3, PB83-121830 and Volume 5, PB83-121855. Sponsored in part by Arizona Dept. of Transportation, Phoenix.
Also available in set of 6 reports PC E99, PB83-121798.

Eight asphalt-rubber samples which were sampled from commercial field-produced asphalt-rubber mixtures used in the Buckeye-Liberty test project in Arizona were tested using absolute viscosity, Schweyer Rheometer, force-ductility, softening point, and low temperature fracture procedures. Mixtures were produced by two major suppliers of asphalt-rubber. Properties of the field produced asphalt-rubbers are compared. Additionally, properties of the field-produced mixtures are compared to those of comparable asphalt-rubber mixtures produced in the laboratory using the Torque-Fork.

PB83-121855 PC **A05**/MF **A01**
Western Technologies, Inc., Phoenix, AZ.
Chemical and Physical Properties of Asphalt-Rubber Mixtures. Phase III. Volume 5. Effect of Temperature.
Final rept. Jun 78-Apr 82,
J. C. Rosner, and J. G. Chehovits. Jun 82, 91p
FHWA/AZ-82/159/5
See also Volume 4, PB83-121848. Sponsored in part by Arizona Dept. of Transportation, Phoenix.
Also available in set of 6 reports, PB83-121798.

This study had the objective of evaluating the effects of temperature on physical properties of asphalt-rubber mixtures. Eight different asphalt-rubber mixtures formulated with two different asphalts and two types of granulated reclaimed rubber at 20 and 25 percent concentrations were studied. These mixtures were comparable to mixtures supplied by two of the major asphalt-rubber producers. These mixtures were tested at three different temperatures - 77F (25C), 39.2F (4C), and -20F (-29C).

PB83-122580 PC **A05**/MF **A01**
Institution of Engineers (India), Calcutta.
Seminar on Use of High Strength Deformed Bars Held at Nagpur on 11-12 April 1981.
Apr 81, 90p

Use of deformed bars for normal building construction is universally accepted but in India its free use is still not very common. One of the reasons has been lack of awareness on the part of common man and professionals of the advantages that can be derived by the use of these bars. The steel production in the country being less than the demand, any attempt made to minimize the use of steel attains significance. In this context this seminar was organized. The technical papers from research workers as well as the field engineers compiled in this publications should prove to be useful to professional engineers at all levels.

PB83-122952 PC **A03**/MF **A01**
Scientific Service, Inc., Redwood City, CA.
Laboratory Testing Program for Development of a Lean Mix Backfill Specification,
Ronald D. Bernard, and Roger S. Tansley. Oct 81, 34p HUD-0002287
Contract HUD-H-5208

This report describes laboratory procedures, materials, and tests employed for the development of a lean mix backfill specification. The development of the backfill specification is based on the analysis of lean mix experience, supplemented by a laboratory testing program. Important factors considered are strength development, self - compaction during placement, flow behavior characteristics, durability, economy of the mix, and ease of removal by excavation. The report describes the laboratory test batch mixes and batching methods and the observations that were made as a result. Conclusions from the various test data and the results of a field test conducted to observe, measure, and photograph the placement of lean mix are recorded. Lean mix is seen as an economical alternative to labor - intensive compacted backfill. The report questions the importance of sulfate resistance and recommends that sulfate resistance not be a lean mix design criterion. The most recent test data indicate that (1) high volumes of fly ash provide significant strength increases to the lean mix, (2) blended aggregates provide greater compressive strengths than fine aggregate only, (3) superplasticizers provide a more workable mix using less water, and (4) use of plant - blended cement / fly ash results in lower strengths when compared with cement - only mixes. Future research areas are suggested and a technical appendix is provided.

PB83-122960 PC **A03**/MF **A01**
Scientific Service, Inc., Redwood City, CA.
Specification for Lean Mix Backfill,
Roger S. Tansley, and Ronald D. Bernard. Oct 81, 26p HUD-0002286
Contract HUD-H-5208

This specification presents general information with respect to the uses and properties of lean mix; includes basic guidelines covering material selection, mixing, and placement; and contains the specific materials, methods, procedures, and performance criteria that are required for a particular project application. It is a standard developed for HUD and is intended for guidance in designing, mixing, placing, and inspecting lean mix material. Lean mix backfill is a mixture of selected aggregate materials, water, and 100 pounds or more of Portland cement per cubic yard. It is intended primarily as a low cement content material for the replacement of unsuitable soils in conjunction with single and multiple family dwelling units and other structures. The mix has a high slump, flowability, and workability, eliminating the need for labor - intensive vibration or compaction. The materials composing the lean mix are described, and methods of going about its preconstruction and construction testing and its curing and cold weather protection are noted. Finally, the text presents the specification for materials, proportioning, and placement of lean mix backfill as a reference standard for application to any project. Graphs are included.

PB83-122986 PC **A03**/MF **A01**
Scientific Service, Inc., Redwood City, CA.
Analysis of Lean Mix Experience. Task III, Report No. 1,
Ronald D. Bernard. Apr 81, 36p HUD-0002290
Contract HUD-H-5208

To develop a final specification for lean mix backfill, this study analyzed data pertaining to its historical use. Lean mix state - of - the - art development has provided information on (1) preparation of a testing program, (2) definition of input parameters toward designing a mix, and (3) development of a provisional specification. Findings from the data analysis show documented evidence of lean mix applications that date from the early 1960's and evidence of the use of soil - cement slurries with high cement contents that date from the 1940's. The development of lean mix has been based on solving a particular problem on a one - time basis, often using native materials without benefit of written specifications. Development of lean mixes, defined by the construction industry as having four or fewer sacks of cement per cubic yard, has been historically at the contractor's request. Lean mixes should be designed with minimum and maximum strength criteria, and locally available granular non - ASTM (American Society of Test Materials) specification aggregate products should be used whenever available. Laboratory test procedures have been minimal, and written specifications are few and general in scope. Lean mixes have primarily been used for utility trench backfill and structural backfill. Lean mix should be workable enough to be placed without benefit of vibration or compaction equipment, although some applications may require minor compactive effort. Concrete admixtures, other than fly ash, are not used to any great degree and probably add prohibitively to the cost. The final product should be more economical than other construction methods of achieving the same goals. Documented lean mix specifications and a list of groups contacted for the study are appended. Six references, tables, a graph, and a map are included. (Author abstract modified).

13D. Containers and Packaging

DE82011016 MF **A01**
Sandia National Labs., Albuquerque, NM.
Design, Analysis, and Testing of a Large, High-Pressure Vessel with Windows.
B. L. Haroldsen, and J. C. Keilman. Jan 82, 30p
SAND-81-8038
Contract AC04-76DP00789
Portions of document are illegible.
Best available copy from document source. Available in microfiche only.

A large, high-pressure vessel with four large windows for optical access was required for flow visualization experiments conducted at Sandia. The design, analysis, and testing of this pressure vessel are discussed in this report. Because of the complexity of the analysis due to the four windows, a scale model of the complete vessel assembly was built and tested to determine its performance capabilities and factor of safety. Finally, a full-scale vessel was instrumented with strain gages and proof-tested to verify the analysis and scale-model test results. (ERA citation 07:047640)

13E. Couplings, Fittings, Fasteners, and Joints

PB83-106112 Not available NTIS
National Bureau of Standards, Washington, DC.
Fitness-for-Purpose Research at the National Bureau of Standards.
Final rept.,
Harry I. McHenry, David T. Read, and Michael G. Dawes. 1982, 10p
Sponsored in part by Naval Sea Systems Command, Washington, DC., and Department of Transportation, Washington, DC. Office of Pipeline Safety Regulation. Pub. in Proceedings of Fitness for Purpose Validation of Welded Constructions, London, England, November 17-19, 1981, pP19-1--P19-10, 1982.

Fitness-for-purpose standards are based on fracture-mechanics relationships between applied strain, required toughness, and flaw size. The approach used here to establish such a relationship for the elastic-plastic case is to measure the driving force for fracture (i.e., the required toughness) as a function of strain in tensile panels for a variety of flaw sizes and configurations.

13F. Ground Transportation Equipment

DE82008113 MF **A01**
Los Alamos National Lab., NM.
Operating Experience with a Liquid-Hydrogen Fueled Buick and Refueling System.
W. F. Stewart. 1982, 42p LA-UR-82-428, CONF-820605-8
Contract W-7405-ENG-36
World hydrogen energy conference, Pasadena, CA, USA, 13 Jun 1982, Portions of document are illegible. Available in microfiche only.

An investigation of liquid-hydrogen storage and refueling systems for vehicular applications was made in a recently completed project. The vehicle used in the project was a 1979 Buick Century sedan with a 3.8-L displacement turbocharged V6 engine and an automatic transmission. The vehicle had a fuel economy for driving in the high altitude Los Alamos area that was equivalent to 2.4 km/L of liquid hydrogen or 8.9 km/L of gasoline on an equivalent energy basis. About 22% less energy was required using hydrogen rather than gasoline to go a given distance based on the Environmental Protection Agency estimate of 7.2 km/L of gasoline for this vehicle. At the end of the project the engine had been operated for 138 h and the car driven 3633 km during the 17 months that the vehicle was operated on hydrogen . Two types of onboard liquid-hydrogen storage tanks were tested in the vehicle: the first was an aluminum Dewar with a liquid-hydrogen capacity of 110 L; the second was a Dewar with an aluminum outer vessel, two copper vapor-cooled thermal radiation shields, and a stainless steel inner vessel with a liquid-hydrogen capacity of 155 L. The Buick had an unrefueled range of about 274 km with the first liquid-hydrogen tank and about 362 km with the second. The Buick was fueled at least 65 times involving a minimum

of 8.1 kL of liquid hydrogen using various liquid-hydrogen storage Dewars at Los Alamos and a semiautomatic refueling station. A refueling time of nine minutes was achieved, and liquid hydrogen losses during refueling were measured. The project has demonstrated that liquid-hydrogen storage onboard a vehicle, and its refueling, can be accomplished over an extended period without any major difficulties; nevertheless, appropriate testing is still needed to quantitatively address the question of safety for liquid-hydrogen storage onboard a vehicle. (ERA citation 07:047325)

DE82011545 PC **A10**/MF **A01**
Jet Propulsion Lab., Pasadena, CA.
Conventional Engine Technology. Volume I. Status of OTTO Cycle Engine Technology.
M. W. Dowdy. 15 Dec 81, 216p JPL-PUB-81-65-V.1
Contract AI01-80CS50194
Portions of document are illegible.

Federally-mandated emissions standards have led to mator changes in automotive technology during the last decade. Efforts to satisfy the new standards have been directed more toward the use of add-on devices, such as catalytic converters, turbochargers, and improved fuel metering, than toward complete engine redesign. The resulting changes are described in this volume, and the improvements brought about by them in fuel economy and emissions levels are fully documented. Four specific categories of gasoline-powered internal combustion engines, i.e., uniform charge engines with and without fuel injection, stratified charge engines, and rotary engines, are covered, including subsystem and total engine development. Also included are the results of fuel economy and exhaust emissions tests performed on representative vehicles from each category. (ERA citation 07:047305)

N82-33636/3 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
Summary of Electric Vehicle DC Motor-Controller Tests.
Final Report.
E. F. Mcbrien, and H. B. Tryon. Sep 82, 30p NAS 1.15:82863, E-1232, NASA-TM-82863
Contract DE-AI01-77CS-51044

The differences in the performance of dc motors are evaluated when operating with chopper type controllers, and when operating on direct current. The interactions between the motor and the controller which cause these differences are investigated. Motor-controlled tests provided some of the data the quantified motor efficiency variations for both ripple free and chopper modes of operation.

N82-33829/4 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
On the Road Performance Tests of Electric Test Vehicle for Correlation with Road Load Simulator.
Final Report.
M. O. Dustin, and R. J. Slavik. Aug 82, 27p NAS 1.15:82900, E-1283, NASA-TM-82900
Contract DE-AI01-77CS-51044

A dynamometer (road load simulator) is used to test and evaluate electric vehicle propulsion systems. To improve correlation between system tests on the road load simulator and on the road, similar performance tests are conducted using the same vehicle. The results of track tests on the electric propulsion system test vehicle are described. The tests include range at constant speeds and over SAE J227a driving cycles, maximum accelerations, maximum gradability, and tire rolling resistance determination. Road power requirements and energy consumption were also determined from coast down tests.

PB83-116814 PC **A10**/MF **A01**
National Center for Vehicle Emissions Control and Safety, Fort Collins, CO.
The Colorado Experience with Inspection/Maintenance Data Handling: Machine Readable Forms.
Final rept.
May 82, 215p EPA-460/3-82-010
Grant EPA-T-901383-01

This report presents a comprehensive discussion of the data handling process in Colorado's decentralized vehicle emissions inspection/maintenance (I/M) program. The purpose of the report is to give other states with operating or planned decentralized I/M programs an opportunity to consider Colorado's innovative and highly successful method of data collection and analysis. The report describes the development and implementation of the Colorado system which uses machine readable forms in order to deal with the large amount of data generated from the many private garage inspection stations. The report also discusses a unique approach used by the State to ensure the use of the greatest amount of valid data in various categories of analysis. Appendices to the report contain complete documentation of the forms, procedures, and data analysis techniques used in the Colorado system.

PB83-116830 PC **A09**/MF **A01**
Southwest Research Inst., San Antonio, TX.
Characterization of Exhaust Emissions from Methanol- and Gasoline-Fueled Automobiles.
Final rept. Jun 81-Mar 82,
Lawrence R. Smith, and Charles M. Urban. Aug 82, 180p EPA-460/3-82-004
Contracts EPA-68-03-2884, EPA-68-03-3073

This report describes the laboratory effort to characterize regulated and unregulated exhaust emissions from four light-duty, spark-ignited automobiles. Two of the automobiles, a 1981 Ford Escort and a 1981 Volkswagen Rabbit, were evaluated with gasoline; one of these was also operated on a gasoline-alcohol blend. The two other vehicles, also a 1981 Escort and a 1981 Rabbit, were evaluated with methanol fuel. The automobiles were evaluated over the Light-Duty Federal Test Procedure (FTP) and the Highway Fuel Economy Driving Schedule (HFET). Additional evaluations with the methanol-fueled Escort and Rabbit were conducted using promoted base metal catalysts, and the Escort was evaluated in a non-catalyst configuration. Exhaust constituents measured, in addition to the regulated emissions, include: aldehydes (including formaldehyde), particulates, individual hydrocarbons, methanol, ethanol, ammonia, cyanide, amines, nitrosamines, and methyl nitrite. Additional exhaust evaluations included mass spectral and Ames bioassay analyses.

PB83-118984 PC **A04**/MF **A01**
Transportation Systems Center, Cambridge, MA.
Preliminary Evaluation of the Scania 112 Bus: The First Three Months at Norwalk Transit District,
R. Gundersen, and R. Pocaro. Jan 82, 52p DOT-TSC-UM262-PM-82-17, UMTA-MA-06-0120-82-1

The Connecticut Department of Transportation and the Norwalk Transit District (NTD) were awarded a grant for the year lease, revenue operation and evaluation of three, heavy-duty, transit coaches that reportedly offer improved performance. This document provides preliminary information on the evaluation of these vehicles. The Scania-112 City Bus was ultimately selected by NTD; selection of the Scania-112 bus centered around the reportedly improved operating characteristics of the vehicle, including: fuel efficiency, low noise level, improved brake service life, improved vehicle maneuverability, and improved passenger accessibility. The evaluation consisted of visual and materials inspection non-revenue performance tests and revenue service evaluation.

PB83-122689 PC **A04**/MF **A01**
Transportation Systems Center, Cambridge, MA.
Assessments of the Skillcraft Small Bus.
Frederick M. Seekell. Jun 82, 63p DOT-TSC-UM129-PM-81-45, UMTA-MA-06-0120-82-5

The Skillcraft (low floor) 'Transmaster' Bus was manufactured in Venice, Florida, and was built to UMTA Small Bus specifications. The low-floor characteristics of the bus make it valuable to Florida's elderly population. The State aided in the purchase of two prototypes of these vehicles for Sarasota County Area Transit (SCAT) and has requested revenue service data be kept on vehicle operation, maintenance history, and rider reactions. UMTA participated in the evaluation of this vehicle. The purpose of the test program was to provide a technical review of the coach. The testing included a thorough review of the materials, dimensions, component list and general configuration of both the larger and smaller coach. Performance tests were conducted, runs were made at full seated load weight and in unloaded conditions, with and without accessory equipment and for special concerns such as stability, hill climb, top speed and similar capabilities. The report states that drivers and operations personnel were pleased with the coaches.

PB83-122770 PC **A99**/MF **A01**
Transportation Systems Center, Cambridge, MA.
System Operations Studies for Automated Guideway Transit Systems: Discrete Event Simulation Model Programmer's Manual.
Final rept.,
John F. Duke, and Roger Blanchard. Jul 82, 704p DOT-TSC-UMTA-82-13, DOT-TSC-UMTA-82-13, UMTA-MA-06-0048-82-1
Contract DOT-TSC-1220
Prepared in cooperation with General Motors Technical Center, Warren, MI.

In order to examine specific automated guideway transit (AGT) developments and concepts, UMTA undertook a program of studies and technology investigations called Automated Guideway Transit Technology (AGTT) Program. The objectives of one segment of the AGTT program, the System Operations Studies, were to develop models for the analysis of system operations, to evaluate performance and cost, and to establish guidelines for the design and operation of AGT systems. This document provides a detailed description of the design, programming logic and implementation of the Discrete Event Simulation Model (DESM). The DESM provides the capability to model the operation of a mass transit system operating over a network composed of guideway links and station within a given time period.

PB83-124537 PC **A02**/MF **A01**
Rottenkolber Holo-System G.m.b.H., Obing (Germany, F.R.).
Manufacture and Testing of a Prototype Holographic Series Tire Tester.
Final rept.,
H. Rottenkolber. Nov 82, 20p BMFT-FB-T-80-192
Trans. of mono. Herstellung und Erprobung des Prototyps eines Holographischen Serien-Reifenpruf-Gerates, Bonn, 27p Dec 80. See also N82-14501.

The testing unit is for nondestructive tire testing, especially for retreads. The working conditions in the production area and the effects on the unit or its components were determined. The elaborated equipment draft meets production requirements.

PB83-124701 PC **A06**/MF **A01**
Battelle Columbus Labs., OH.
Improvement in Magnetic Techniques for Rail Inspection.
Final rept. Aug 76- Dec 77,
George J. Falkenach, David J. Kooger, and Robert P. Meister. Jun 81, 105p DOT-TSC-FRA-81-14, FRA/ORD-81/49
Contract DOT-TSC-1244-1

Current inspection of rail for internal defects is carried out by ultrasonic and/or magnetic technique for inspecting rail for internal flaws. The major emphasis was placed on improving the speed and detectability of current techniques. Experimental work was performed directed toward determining where and how improvements can be made with existing equipment and techniques. The three major areas investigated for improvement were magnetization, flaw sensors, and signal processing.

PB83-124958 PC **A05**/MF **A01**
National Materials Advisory Board (NRC), Washington, DC.
Prediction of Rail Buckling: Recommendations for Development of Test Methods.
Final rept.
Mar 82, 80p NMAB-388, DOT/FRA/ORD-82/21
Contract DTFR53-80-C-00043

Railroad track structure can buckle if excessive compressive force is developed due to a temperature increase. The resulting misalignment can be a significant cause of train accidents. There is no practical method for measuring the longitudinal force without disturbing the track. Physical phenomena were reviewed in an effort to establish a basis for measuring longitudinal force. Various nondestructive testing techniques were considered, and it was concluded that no one of them applied singly is capable of providing an unambiguous practical measurement. Short-, medium-, and long-term recommendations are made, and the continued development of two methods (rail vibration and a magnetic technique) is endorsed. Fundamental studies also are recommended to provide the basis for a model that will identify the influence of texture, cold work, and other metallurgical properties on the measured results. Three specific areas are identified as showing promise but in need of sustained research.

PB83-125559 PC **A04**/MF **A01**
Dynatrend, Inc., Woburn, MA.
Assessment of Low-Cost Elevators for Near Term Application in Transit Stations.
Final rept. Dec 80-Jun 81,
Kevin M. Shea, M. Ray Whitley, and Braja S. Mahapatra. Jul 82, 64p DOT-TSC-UMTA-81-60, UMTA-MA-06-0125-82-1
Contract DTRS57-80-C-0081
Prepared in cooperation with Southeastern Pennsylvania Transit Authority, Philadelphia.

This study of low-cost elevators for use in existing transit stations was commissioned by the Transportation Systems Center and included a four-day site study of screw column elevators manufactured by the Ebel Company of Brussels, Belgium. The site studies were made at the company offices and plant and at Belgian elevator installation locations. Information was obtained on current practices pertaining to screw column elevator operation in Belgium, on current screw column elevator design, on code considerations both in Belgium and the United States, and on the Ebel Company's policy regarding the manufacturing of the product in the United States. The assessment team also studied design, construction, maintenance costs, and actual use.

PB83-126086 PC **A11**/MF **A01**
Office of Technology Assessment, Washington, DC.
Synthetic Fuels for Transportation. Background Paper Number 1: The Future Potential of Electric and Hybrid Vehicles,
W. M. Carriere, W. F. Hamilton, and L. M. Morecraft.
Mar 82, 236p OTA-BP-E-13
Prepared by General Research Corp. Library of Congress catalog card no. 82-600500.

This report presents a comprehensive review of the future of electric and hybrid vehicles through the year 2010 in the United States. It discusses the technology, performance, and limitations of probable future electric and hybrid vehicles; the infrastructure necessary to produce and support them; market-ability; and finally, effects on the nation if used in large numbers.

PB83-854026 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Diesel Locomotives. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 169p
Supersedes PB82-863051.

This bibliography contains citations concerning the development, design, and construction of AC/DC lomotives. Turbochargers, fuel efficiency, and computer systems to measure operating performance are considered. (This updated bibliography contains 187 citations, 12 of which are new entries to the previous edition.)

13H. Industrial Processes

PB83-107276 PC **A13**/MF **A01**
Council for Scientific and Industrial Research, Pretoria (South Africa).
Efficient Metal Forming and Machining (3rd Seminar) (Doeltreffende Metaalvorming en -Maujinering (3de Seminaar)).
Papers.
3 Nov 81, 277p ISBN-0-7988-2232-5
Portions of this document are not fully legible.

Contents:
- Physical state of machined surfaces;
- Cold, warm and hot forming;
- Forming and bending of stainless steel;
- Quality and the metal-working industries;
- Optimization of multi-tooling operations;
- Fine blanking;
- Down to earth with CAD/CAM;
- New parting tool system with self-gripping, replaceable carbide inserts;
- Machining systems;
- Threading with cemented carbide tools;
- High performance threading taps optimized machining;
- Precision measurement of gears;
- Applied process for the design and manufacture of large press tooling;
- Drill point geometry;
- Heat exchanger tube to tubeplate joints produced by explosives;
- and Vibrations in grinding machines.

PB83-111070 PC **A04**/MF **A01**
National Bureau of Standards, Washington, DC.
Measurement Assurance for Dimensional Measurements on Integrated-Circuit Photomasks.
Technical note (Final),
Carroll Croarkin, and Ruth N. Varner. Aug 82, 53p
NBS-TN-1164

Optical Microscope Linewidth-Measurement Standards, SRM-474 and SRM-475, have been developed by NBS for optical imaging systems capable of making line-spacing and linewidth measurements in the 0.5 micrometer - 12 micrometers regime on IC photomasks. Each artifact affords a means of reducing systematic errors via a calibration curve and keeping the optical system in statistical control. Procedures are given for accomplishing these goals along with a discussion of the uncertainty of the calibrated values.

PB83-114157 PC **A06**/MF **A01**
Svejsecentralen, Glostrup (Denmark).
Process Dependent Threshold Limit Values in Welding,
Erik Beck Hansen. c1982, 113p 82-38, ISBN-87-87806-53-3

The study project has aimed at providing a basis for decisions on the establishment of process dependent threshold limit values in welding and flame cutting. On the basis of the results from 978 measurements of air pollution, an analysis has been carried out of the resulting threshold limit values (TLVRes) of fumes from welding and flame cutting. Through statistical treatment of the results of the measurements, the distribution of TLVRes has been studied for arc welding with covered electrodes (MMA welding), gas shielded arc welding (MIG/MAG welding) and flame cutting of unalloyed steels, and for tungsten inert gas shielded welding (TIG welding) and MMA welding of stainless steels.

PB83-114991 PC **A06**/MF **A01**
Centre Technique des Industries Mecaniques, Senlis (France).
Determination of Deformations Due to the Forming Operations of Plates,
C. Bouhelier, and Y. Marez. Oct 82, 115p
Trans. of mono. Determination des Deformations Engendrees par les Operations de Formage des Toles Epaisses, n.p., 111p Dec 80. See also N82-21628.

Formulas for predicting the deformation of thick plates subjected to various forming techniques were verified and improved. By knowing expected deformation, boiler manufacturers can better judge the utility of post-forming heat treatments. Deformation of 29 boiler components was measured. Forming techniques considered were cold stamping, hot stamping, cold spinning, hot stamping followed by cold spinning, hot spinning on a forming machine, repeated cold stamping, and cold bending. Measured deformation is compared with calculated deformation. Revised formulas are given.

PB83-115329 PC **E05**/MF **E05**
Plastics and Rubber Inst., London (England).
Papers Presented at Symposium: Mouldmaking '82,
S. K. Bahattacharyya, P. J. C. Gough, J. E. Nightingale, R. K. Tasker, and R. Jensen. 28 Jan 82, 82p
Portions of this document are not fully legible.

Contents: Laser machining; Recent developments in EDM and ECM; Training schemes inside and outside Europe; Injection moulding tools for rubber; Influence of injection moulding on toolmaking; and Mould cooling criteria.

PB83-116145 PC **A02**/MF **A01**
Svejsecentralen, Glostrup (Denmark).
Recent Advances in the Documentation of Ultrasonic Weld Inspection,
Sven Erik Iversen. c1982, 25p 82.39

The P-scan system developed by the Danish Welding Institute for producing permanent records of ultrasonic weld inspections in the form of complete projection images of the interior of the welds is subject to constant improvement and refinement. New position scanners, manual and automatic, for the precise location of all echo sources have been developed and tested in industrial practice at a great variety of applications. The difficulties encountered in the inspection of pipe welds in complicated pressure piping systems with a minimum of accessability have been eliminated through miniaturized pipe scanners. Various particularly valuable features of the projection image scanning system are presented, including new hardware and software facilities for the detection and recording of transverse cracks in pipe welds.

PB83-117853 PC **A03**/MF **A01**
Allgemeine Elektricitaets-Gesellschaft AEG Telefunken, Heilbronn (Germany, F.R.).
Electronics: Development of a Fully Automatic Process for the Wireless Bonding of Integrated Circuits,
Alfons Schmitt. 1982, 47p BMFT-FB-T-80-085
Trans. of mono. Elektronik - Entwicklung eines Vollautomatisierbaren Montageverfahrens zur Drahtlosen Kontaktierung Integrierter Schaltkreise, n.p., 63 p Nov 80. See also N82-10338.

The report deals with the development and application of the Sicon technique for the completely automatic, wireless mounting of integrated-circuit wafers. Information is presented on the deposition of the gold balls and route followed in attaining the requisite solderability of the spider legs to these, particular emphasis being placed on the various metal plating and coating systems tried. The scanning and positioning techniques employed for the individual integrated-circuit wafers passing through the automatic, wireless-mounting equipment are described. Basically, the scanning is effected with a television camera and final positioning carried out with a computer - linked 'X' - and 'Y' - coordinate drive system. The Sicon, wireless-mounting technique is extremely economic and suitable both for high-reliability integrated-circuit wafers and for devices incorporated in consumer products.

PB83-118216 PC **A04**/MF **A01**
Technische Hochschule, Darmstadt (Germany, F.R.). Fachgebeit Mechanische Technologie und Werkzeugmaschinen.
Technical and Scientific Research Accompanying the Projects on 'Needle Milling', including the Determination of Specific Process Parameters,
H. P. Wolf. Oct 82, 62p BMFT-FB-HA-81-005
Trans. of mono. Technisch-wissenschaftliche Begleitforschung zu den Vorhaben 'Nadelfrasen' einschliesslich der Ermittlung der Verfarenskenngrossen', n.p., 72p Feb 81. See also N82-15447.

The new manufacturing process, needle milling, was studied. The first application is the discharge of surfaces on rolled products, such as sheet metal, pipes, sheet bars, and so on. This machining is to prepare final rolling operations. The methods used today do not meet the demands of humane working conditions (noise, dust, refinish by hand, pickling, pollution). The application of needle milling seems to be an effective alternative. On testing the applications in cooperation with industrial enterprises, the fundamentals of needle milling were defined and further possibilities of application were found.

PB83-852657 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Vacuum Diffusion Welding. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 234p
Supersedes PB81-851685.

This bibliography contains citations concerning the effects of creep deformation on characteristics of diffusion welded joints, diffusion welding of cast iron and nickel to niobium, low-pressure diffusion bonding of titanium, and diffusion bonding of refractory alloys to steel. Constructing the vacuum structures for Joint European Torus (J.E.T.) is also included in this bibliography. (This updated bibliography contains 262 citations, 62 of which are new entries to the previous edition.)

PB83-853887 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.

Electroplating of Nickel. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 205p
Supersedes PB81-854242.

This bibliography contains citations concerning nickel electroplating technology. Feasibility analyses and process controls of industrial nickel plating operations, nickel recovery from rinsewaters and performance evaluations of the nickel electroplating process are among the topics discussed. Solar cell applications are presented. (This updated bibliography contains 172 citations, 74 of which are new entries to the previous edition.)

PB83-854034 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Drafting Machines and Practices. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 194p
Supersedes PB82-862368.

This bibliography contains citations concerning computer-aided and standard drafting practices and machines. Standards, document generation, identification and filing systems, symbols, drafting techniques and interactive graphics are discussed. The use of computers in drafting and design is also considered. (This updated bibliography contains 240 citations, 19 of which are new entries to the previous edition.)

PB83-854083 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Ball Milling Techniques. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 139p
Supersedes PB81-863854.

This bibliography contains citations concerning wet and dry ball milling techniques with various particulate materials. Design, material selection, engineering parameters, performance characteristics, and control systems for ball mills are discussed. (This updated bibliography contains 143 citations, 20 of which are new entries to the previous edition.)

PB83-854737 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Robot Welding. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 74p
Supersedes PB82-856550.

This bibliography contains citations concerning the design, manufacture, and industrial applications of industrial robots and teleoperators for welding operations. Arc welding and spot welding operations are the processes emphasized. Performance evaluations of welding robots presently operating in many industrial environments are discussed relative to such factors as design change recommendations, feature peculiarities, quality control, and economics. (This updated bibliography contains 79 citations, 11 of which are new entries to the previous edition.)

PB83-854943 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Magnetic Separation of Materials. June, 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for Jun 70-Nov 82.
Nov 82, 110p
Supersedes PB81-855231.

This bibliography contains citations concerning the design, development and testing of equipment which used magnetism as a means of separating magnetic materials from nonmagnetic materials. This technology is used extensively in cleaning fossil fuels, separating particles from fly ash, scrap metal recovery, beneficiation of various ores, and in processing municipal and other wastes. The articles presented describe various operating systems, separating techniques, and high-gradient magnetic separation which can be used with certain metal oxides and other paramagnetic materials. (This updated bibliography contains 113 citations, 77 of which are new entries to the previous edition.)

PB83-855023 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Plating on Plastics. 1972-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1972-Nov 82.
Nov 82, 270p
Supersedes PB82-856790.

This bibliography contains citations concerning the plating, electroplating, and electroless plating of metal onto plastics and rubber. Metallization techniques and processes, and decoration of plastics with metallic films are discussed. Scanning electron microscope tests are described to illustrate the plating processes of foam surfaces. Industrial techniques for eliminating the surface glaze of plastics to be plated to ensure coating adhesion are included. (This updated bibliography contains 326 citations, 41 of which are new entries to the previous edition.)

13I. Machinery and Tools

DE82006965 PC **A03**/MF **A01**
Sandia National Labs., Albuquerque, NM.
Failure Mechanisms of Polycrystalline Diamond Compact Drill Bits in Geothermal Environments.
E. R. Hoover, and L. E. Pope. Sep 81, 28p SAND-81-1404
Contract AC04-76DP00789

Over the past few years the interest in polycrystalline diamond compact (PDC) drill bits has grown proportionately with their successful use in drilling oil and gas wells in the North Sea and the United States. This keen interest led to a research program at Sandia to develop PDC drill bits suitable for the severe drilling conditions encountered in geothermal fields. Recently, three different PDC drill bits were tested using either air or mud drilling fluids: one in the laboratory with hot air, one in the Geysers field with air, and one in the Geysers field with mud. All three tests were unsuccessful due to failure of the braze joint used to attach the PDC drill blanks to the tungsten carbide studs. A post-mortem failure analysis of the defective cutters identified three major failure mechanisms: peripheral nonbonding caused by braze oxidation during the brazing step, nonbonding between PDC drill blanks and the braze due to contamination prior to brazing, and hot shortness. No evidence was found to suggest that the braze failures in the Geysers field tests were caused by frictional heating. In addition, inspection of the PDC/stud cutter assemblies using ultrasonic techniques was found to be ineffective for detecting the presence of hot shortness in the braze joint. (ERA citation 07:053565)

N82-34101/7 PC **A03**/MF **A01**
Canada Inst. for Scientific and Technical Information, Ottawa (Ontario).
Computer-Aided Design, Drawing and Manufacturing System for Dies and Molds.
T. Mori, and M. Yasuda. 1982, 47p NRC/CNR-TT-2030, ISSN-0077-5606
Trans. into English from Natl. Tech. Rept. (Matsushita Elec. Ind. Co., Osaka), V. 24, No. 6, 1978 p 1046-1056.

A computer-aided system for designing, drawing, and manufacturing molds and dies and for conducting control operations was developed. This system makes it possible to save labor and shorten the delivery time for molds and dies by making operations simpler and more flexible, resulting in increased efficiency in the design, manufacturing and control phases of production. Features that assist in the design, drawing and numerically controlled machining of these types of molds and dies are emphasized.

PB83-107821 PC **A03**/MF **A01**
Wohlenberg (H.) G.m.b.H. und Cie K.G., Hanover (Germany, F.R.).
Micro-Processor Control for Cutting Machines.
U. Butter, and W. Glindeman. Sep 82, 35p BMFT-FB-T-81-142
Trans. of mono. Mikroprozessorsteuerung fur Schneidemaschinen, n.p., 52p Aug 81. See also N82-15239.

A multicomputer system for cutting machines has been developed which employs microprocessors which fit well into the system due to their attributes. One CPU controls the keyboard computer and renders guided and controlled user-programming; it also performs logical tests of auxiliary function combinations. The machine-logic is controlled by a second microprocessor and is monitored constantly. Program management and overall coordination of the systems is the responsibility of a third microprocessor which acts as a master. Clearly delineated interfaces, single-system test, simple error analysis, good interchangeability are characteristic. User-program memory for 1024 information bits (dimensions and auxiliary functions) is provided. Data protection is by RAM memory and tape.

PB83-854018 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Vacuum Deposition Equipment. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 91p
Supersedes PB81-852584.

This bibliography contains citations concerning equipment and techniques used in the processes of vacuum deposition, vapor plating and ion plating. Also included are descriptions of the applications of these techniques to solar devices, semiconductors, thin films, metal coatings, vacuum wave guides and related products. (This updated bibliography contains 84 citations, 23 of which are new entries to the previous edition.)

PB83-854265 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Roll Pass Design For Rolling Mills. 1966-November, 1982 (Citations from the Metals Abstracts Data Base).
Rept. for 1966-Nov 82.
Nov 82, 276p
Supersedes PB82-860651.

This bibliography contains citations concerning the design and construction of rolling mills in terms of the number of passes required to achieve the desired final plate thicknesses. Roll forming of slabs and tubes is emphasized. Computerized process control of the mills is also discussed. Factors contributing to the mechanical properties of the final product include plastic deformation, stress effects, and the roll pass sequence. (This updated bibliography contains 342 citations, 62 of which are new entries to the previous edition.)

PB83-854448 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Flywheels: Design and Applications. 1972-November, 1982 (Citations from the International Aerospace Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 150p
Supersedes PB81-854598.Prepared in cooperation with the National Aeronautics and Space Administration, Washington, DC.

This bibliography contains citations concerning the design and use of flywheels and reaction wheels. Energy generation and storage systems, fiber composite construction and environmental impacts on flywheel performance are among the topics discussed relative to satellite technology. Non-space applications are also presented. (This updated bibliography contains 143 citations, 49 of which are new entries to the previous edition.)

PB83-854950 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Vacuum Deposition Equipment. 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for 1970-Nov 82.
Nov 82, 270p
Supersedes PB82-858705.

This bibliography contains citations concerning techniques and equipment for the vacuum deposition of a wide variety of materials. Major emphasis is placed on the use of this equipment for the deposition of thin semiconducting films for the electronics industry, and includes devices such as solar cells, microelectronics, and integrated circuits. (This updated bibliography

contains 213 citations, 22 of which are new entries to the previous edition.)

PB83-854068 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Vacuum Deposition Equipment. 1972-November, 1982 (Citations from the International Aerospace Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 158p
Supersedes PB82-856697.Prepared in cooperation with the National Aeronautics and Space Administration, Washington, DC.

This bibliography contains citations concerning techniques and equipment for the vacuum deposition of a wide variety of materials. Topics include thin film devices, solar cells, erosion resistant coatings, photo cathodes, optical fibers, and microelectronic systems. The vacuum deposition of corrosion resistant coating for high temperature applications is also included. (This updated bibliography contains 150 citations, 17 of which are new entries to the previous edition.)

13J. Marine Engineering

PB82-916406 PC **A02**/MF **A01**
National Transportation Safety Board, Washington, DC. Bureau of Accident Investigation.
Marine Accident Report - Sinking of the M/V OXY PRODUCER in the Atlantic Ocean Near the Azores Islands, September 20, 1981.
24 Aug 82, 20p NTSB-MAR-82-6
Paper copy also available on subscription, North American Continent price $60.00/year; all others write for quote.

On September 20, 1981, the integrated tug-barge OXY PRODUCER/OXY 4102 was anchored about 1 nmi offshore from Ponta Delgada, San Miguel Island, Azores, and was undergoing repairs. The barge was carrying a cargo of 39,831 tons of phosphoric acid. During the early morning, the winds and seas increased, and the hulls of the catamaran tug began slamming against the hull of the barge. The master believed that the tug-barge would ride the seas better if underway, and he took the tug-barge from the anchorage about 0550. However, the slamming continued and the tug's hulls were breached. The tug subsequently became disconnected from the barge, flooded, and sank about 0746. No persons were injured, but the tug, valued at approximately $24 million, was lost. The National Transportation Safety Board determines that the probable cause of this accident was the failure of the integrated tug-barge interlocking devices and of the bumper pads on the tongue of the barge because of inadequate design, poor construction, improper operation, or a combination of these factors, which resulted in the breaching of the hulls of the tug OXY PRODUCER from repeated impacts with the tongue of the barge OXY 4102 and which caused the separation of the tug from the barge.

PB83-117580 PC **A04**/MF **A01**
Michigan Univ., Ann Arbor. Sea Grant Program.
Effects of Control Systems on Optimatization of Ship Size for Navigation in Restricted Waters of the Great Lakes.
Howard McRaven Bunch, Mark Evans Lasher, and Charles J. Younger, Jr. Dec 81, 57p MICHU-SG-81-204
Grant NA79AA-D-00093
Also pub. as Michigan Univ., Ann Arbor. Dept. of Naval Architecture and Marine Engineering. NA-ME-231.

The study examined the question of how alteration of traditional channel clearances (i.e., three times ship width for one-way channels, and seven to eight times vessel beam for two-way traffic) would affect the economics of increasing the ship's dimensions. First there was a study of ship dimension optimization, holding draft constant, to meet Great Lakes depth constraints. It was found that the optimum-sized vessel is approximately 1,250' in length, 156' in width, and has a 27.2' draft (maximum allowable without dredging). The second task was to estimate the costs required to modify channels and harbors to accommodate the optimally-sized ship.

PB83-119123 PC **A11**/MF **A01**
Texas A and M Univ., College Station.
Bibliography of Maritime and Naval History Periodical Articles Published 1978-1979 with Cumulative Indexes for 1970-1979.
Charles R. Schultz. Sep 82, 245p TAMU-SG-83-602
Grant NA81AA-D-00092
See also PB-295539.

Contents:
- Exploration, Navigation, Cartography;
- Merchant sail & general shipping - North America;
- Merchant sail & general shipping - other regions;
- Merchant steam - ocean & tidewater;
- Inland navigation;
- Seaports;
- Shipbuilding & allied topics;
- Maritime law;
- Small craft;
- Associations & unions;
- Fisheries;
- Naval to 1939 - North America;
- Naval to 1939 - other regions;
- World War II & postwar naval;
- Marine art, ship models, collections & exhibits;
- Pleasure boating & yacht racing.

PB83-119339 PC **A03**/MF **A01**
Transportoekonomisk Inst., Oslo (Norway).
Er Ferjetakstene for Lave (Are Ferry Fares too Low),
Knut O. Gabestad. Aug 82, 48p ISBN-82-7133-404-2
Text in Norwegian.

The report gives a general view of costs, incomes and subsidies on the ferries that connect major public roads in Norway. As a basis for a new fare system, vehicle cost has been computed. A change from the present fare systems to fares based on vehicle cost, could give a considerable increase in the fares. The effect on the demand will probably be small. The need for subsidies will then be less.

PB83-122861 PC **A02**/MF **A01**
General Accounting Office, Washington, DC. Procurement, Logistics, and Readiness Div.
The 1978 Navy Shipbuilding Claim Settlement at Electric Boat--Status as of December 26, 1981.
Report to the Congress.
26 Oct 82, 16p GAO/PLRD-83-5, B-197665

The Defense Appropriation Authorization Act of 1979 requires the Comptroller General to audit two contracts with Electric Boat for constructing SSN-688 class nuclear attack submarines that were involved in a shipbuilding claim settlement. The audit is to ensure that funds authorized to pay for contract modifications made in the interest of national defense are used only on the two contracts, and that the contractor does not use such funds to realize any total combined profit on these contracts. GAO found that the funds are being spent as intended and a substantial loss is still being projected by the contractor. Moreover, the contractor, early in 1982, formally relinquished all rights to claim or seek insurance reimbursement for costs of defective workmanship under the contracts. Previously, Electric Boat sought to fully recover these costs.

PB83-854406 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Trawlers and Trawling Equipment. 1974-November, 1982 (Citations from Oceanic Abstracts).
Rept. for 1974-Nov 82.
Nov 82, 136p
Prepared in cooperation with Cambridge Scientific Abstracts, Washington, DC.

This bibliography contains citations concerning trawling gear and ship equipment used on trawlers. The citations include special hull designs appropriate to stern and beam trawlers, and special propulsion designs. Trawling gear includes fittings for hook-up, lifting devices, net patterns, trawl boards, winches and lines. Ship equipment includes trawl doors, electronics for fish finding, depth sounders, generators, communication equipment and navigation equipment. (Contains 139 citations fully indexed and including a title list.)

PB83-854612 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Marine Propellers. 1975-November, 1982 (Citations from Information Services in Mechanical Engineering Data Base).
Rept. for 1975-Nov 82.
Nov 82, 69p
Supersedes PB82-855735.Prepared in cooperation with Cambridge Scientific Abstracts, Washington, DC.

This bibliography contains citations concerning developments in propeller design for use in marine environments, and their effects on marine vessel propulsion. Computer analysis of such factors as fatigue damage, ship propulsive performance, energy conservation, and noise levels are examined with reference to ship propellers. The harmful effects of cavitation on marine propellers are also included. (This updated bibliography contains 78 citations, 12 of which are new entries to the previous edition.)

13K. Pumps, Filters, Pipes, Fittings, Tubing and Valves

PB83-123224 PC **A04**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
Experimental Investigation of Transport of Discrete Solids, With Surge Flows in a 10.0 Centimeter (CM)-Diameter Partially Filled Pipe,
Bal M. Mahajan. Oct 81, 65p NBSIR-81/2450, HUD-0002322

This report presents the results of a series of experiments on the transport of discrete solids with surge flows in a partially filled slightly pitched horizontal pipe. The experimental apparatus, instrumentation, and procedures are described. The experiments were conducted using a cylindrical solid in a 10 - cm diameter pipe. The water surge flows were obtained by discharging different volumes of water into the pipe from a falling head open container which simulated a water closet. For each experiment, flow - induced solid velocities and stream depth histories at various locations along the length of the pipe were measured. The effects of water volume used, pipe slope, and size of the solid on the solid velocities were examined. Solid velocities were compared with the maximum water velocities estimated from the stream depth histories. Also, the distance traversed by the solids in the pipe were measured for those cases in which the solids did not clear the pipe. The solid velocity increased with an increase in water volume used, a decrease in the size of the solid, and an increase in the pipe slope. The solid velocity in the initial reach of the pipe was less than the maximum water velocity, and the solid velocity approaches the maximum water velocity as the solid traveled downstream, except for some experiments with small water volumes. The distance traversed by the solid increased with an increase in water volume, a decrease in the size of the solid, and an increase in the pipe slope. The report suggests that the 7.6 - cm pipe may be slightly better for transport of solids with small water volumes than the 10 - cm pipe. Graphs, diagrams, a photograph, and 15 references are appended. Tables and a few footnotes are included. (Author abstract modified).

13L. Safety Engineering

PB83-114942 PC **A10**/MF **A01**
Bendix Corp., Cocoa Beach, FL. Launch Support Div.
Assessing Safety in Fossil Fueled Electric Power Generating Plants.
Final rept.,
Arthur Frezza, and D. A. Decker. Sep 78, 202p
Contract PHS-NIOSH-210-77-0038

The safety record of central electric power generating facilities utilizing fossil fuels as a primary energy source was evaluated. Records of 30 recent incidents which occurred during normal operation and maintenance and involving a safety problem were analyzed to determine their extent and magnitude. The commonality of occurrences and cause was also interpreted. The number of fatalities and injuries were minimal but property losses were high. There was no common cause or agent associated with incidents which involved fatali-

ties or hospitalization. The author concludes that improved fire protection, loss prevention, life and personnel safety programs would significantly reduce the impact of safety related incidents.

PB83-115907 PC **A15/MF A01**
Federal Emergency Management Agency, Washington, DC.
Causes by Time and Month (1978).
18 Nov 80, 335p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-116368 PC **A03/MF A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4: Kansas (1980).
18 Mar 81, 34p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-116376 PC **A03/MF A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-3) and (4): Tennessee (1980).
1980, 40p

No abstract available.

PB83-116384 PC **A03/MF A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Nebraska (1980).
29 Apr 81, 35p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-116392 PC **A03/MF A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Iowa (1980).
18 Mar 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use a supportive data only and requires understanding aand familiarity of the data system.

PB83-116764 PC **A03/MF A01**
Federal Emergency Management Agency, Washington, DC.
1980 National Estimates Reports (1-4): Arizona.
8 Jul 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-116772 PC **A03/MF A01**
Federal Emergency Management Agency, Washington, DC.
1980 National Estimates Reports (1-4): Georgia.
18 Mar 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-116780 PC **A03/MF A01**
Federal Emergency Management Agency, Washington, DC.
1980 National Estimates Reports (1-4): Michigan.
8 Jul 81, 35p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-117242 PC **A05/MF A01**
Transportation Systems Center, Cambridge, MA.
Transportation Safety Information Report: 1981 Annual Summary.
Final rept.,
P. Doyle, and J. Mitchell. Sep 82, 80p DOT-TSC-RSPA-82-4
See also report for 1980, PB81-227498.

The report is a compendium of selected national-level transportation safety statistics for all modes of transportation. The report presents and compares data for transportation fatalities, accidents, and injuries for the current and preceding years. Featured in this report is the annual summary of modal safety hazards and safety program highlights for 1981, as well as summary charts detailing modal safety trends from 1971-1981.

PB83-118703 PC **A12/MF A01**
Federal Emergency Management Agency, Washington, DC.
1979 Residential Detector Performance (Dollar Loss).
25 Oct 80, 268p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-118976 PC **A99/MF A01**
Federal Emergency Management Agency, Washington, DC.
Residential Heating Fire Deaths, 1980.
22 Mar 82, 789p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119016 PC **A17/MF A01**
Federal Emergency Management Agency, Washington, DC.
Appliance Fires (No Garages), 1979.
27 Sep 80, 400p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119032 PC **A19/MF A01**
Federal Emergency Management Agency, Washington, DC.
Residential Electrical Fires (Including Garages), 1979.
27 Sep 80, 439p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119040 PC **A13/MF A01**
Federal Emergency Management Agency, Washington, DC.
Residential Detector Performance (Look at Deaths), 1979.
28 Oct 80, 277p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119065 PC **A99/MF A01**
Federal Emergency Management Agency, Washington, DC.
Residential Fires (Including Residential Garages), 1980.
26 Oct 81, 787p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119107 PC **A13/MF A01**
Federal Emergency Management Agency, Washington, DC.
Residential Detector Performance (Civilian Injuries 1979).
26 Sep 80, 277p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119115 PC **A13/MF A01**
Federal Emergency Management Agency, Washington, DC.
Residential Detector Performance (Civilian Injuries 1980).
1980, 300p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119156 PC **A99/MF A01**
Federal Emergency Management Agency, Washington, DC.
Crosstab of Outside Fire Losses (1980).
1980, 690p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119164 PC **A17/MF A01**
Federal Emergency Management Agency, Washington, DC.
Crosstab of Fires: Occupation by Firefighter Injuries and Deaths (1980).
1980, 378p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119214 PC **A11/MF A01**
Federal Emergency Management Agency, Washington, DC.
Crosstab of Fires: Deathrate by Termination Stage (1980).
1980, 237p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119271 PC **A06/MF A01**
National Fire Service Coll., Nagpur (India).
Drill Manual for the Fire Services of India.
1979, 108p

The purpose of the manual is to bring about a complete uniformity in the methods of operating and handling various fire-fighting implements and appliances so as to achieve speed, efficiency, and confidence amongst the working fire service personnel all over the country. This is particularly considered very necessary when aid is required in case of a major serious fire, from another neighbouring fire service, inwhich case, it should be possible for the available fire service personnel and fire-fighting equipment to be utilized to the best possible advantage under a unified command. The drills have been based on practical working conditions obtainable in the country and are mostly the standard fire service practice and established fire-fighting methods in vogue in the metropolitan fire service.

PB83-119618 PC **A03/MF A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Connecticut (1980).
10 JUI 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119826 PC **A03/MF A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Maryland (1980).
29 May 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive

data only and requires understanding and familiarity of the data system.

PB83-119834 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports 1-3): Minnesota (1980).
29 Apr 81, 39p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119842 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-3): Rhode Island (1980).
29 Apr 81, 33p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-119859 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Missouri (1980).
29 May 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-120204 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Montana (1980).
29 May 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-120212 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): California (1980).
10 Jul 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-120220 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Illinois (1980).
3 Dec 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-121871 PC **A99**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Crosstab of Vehicle Fires, 1980.
12 Apr 82, 702p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-121889 PC **A25**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Seasonal Patterns of Fires, 1979.
3 Dec 80, 587p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-121897 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-3) and (4): Utah (1980).
29 Apr 81, 39p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-122432 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): South Dakota (1980).
7 Sep 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-122614 PC **A14**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Residential Detector Performance (Civilian Deaths) - 1980.
23 Mar 82, 303p
See also report for 1979, PB83-118703.

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-122622 PC **A11**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Civilian Injuries: Causegroup and Injury Related Variables (1980).
24 Apr 82, 246p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-124495 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Oregon (1980).
29 May 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-125070 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): New York State (1980).
10 Jul 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-125088 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): North Carolina (1980).
10 Jul 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-125096 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): West Virginia (1980).
7 Sep 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-125104 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Wisconsin (1980).
10 Jul 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-125112 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Wyoming (1980).
29 May 81, 36p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-125716 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-4): Ohio (1980).
10 Jul 81, 32p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-125740 PC **A18**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
1979 Appliance Fires (Including Garages).
27 Sep 80, 410p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-126136 PC **A03**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
National Estimates Reports (1-3) and (4): Washington (1980).
29 Apr 81, 39p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-126144 PC **A20**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Residential Appliances (by EII by FHI by FMI) (1980).
17 Mar 82, 461p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-126227 PC **A99**/MF **E06**
Federal Emergency Management Agency, Washington, DC.
Residential Heating Fires (1979).
6 Mar 81, 1133p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-126490 PC **A13**/MF **A01**
Fire Administration, Washington, DC.
Residential Detector Performance (Dollar Loss) - 1980.
24 Mar 82, 299p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-126508 PC **A12**/MF **A01**
Fire Administration, Washington, DC.

Crosstab of Residential Smoking Fires (1980).
7 Apr 82, 271p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-127779 PC **A99**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Residential Heating Fires (1980).
23 Mar 82, 787p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-127787 PC **A99**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Residential Heating Fire Deaths (1980).
26 Oct 81, 786p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-127795 PC **A17**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Crosstab of Fires: Occupation by Civilian Injuries and Deaths (1980).
24 Apr 82, 377p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-127803 PC **A99**/MF **E08**
Federal Emergency Management Agency, Washington, DC.
Residential Heating Fire Deaths (1979).
7 Mar 81, 1332p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-127811 PC **A24**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Residential Heating Fires (No Garages) (1978).
25 Oct 80, 572p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-127829 PC **A18**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Residential Electrical Fires (No Garages) (1979).
27 Sep 80, 405p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-127894 PC **A99**/MF **E06**
Federal Emergency Management Agency, Washington, DC.
Residential Heating Fires (No Garages) (1979).
15 Dec 80, 981p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-127910 PC **A99**/MF **A01**
Federal Emergency Management Agency, Washington, DC.
Residential Heating Fire Deaths, 1980.
1981, 786p

This document contains computer tables generated from data collected by the NFIRS for use as supportive data only and requires understanding and familiarity of the data system.

PB83-127985 PC **A07**/MF **A01**
Mission Research Corp., Santa Barbara, CA.
A Guide for the Preparation of Fire Pumper Vehicle Performance Specifications.
L. Pietrzak, R. Enns, and O. Schleich. Jul 76, 137p
Contract NSF-C961, Grant NSF-SSH74-20472
Prepared in cooperation with National Fire Protection Association, Boston, MA. Sponsored in part by Fire Administration, Washington, DC.

The purpose of this document is fourfold: (1) to introduce members of the fire service to the project, (2) to provide an initial set of procedural guidelines for specifying vehicle response performance, (3) to provide an overview of the User's Manual to be developed, and (4) to elicit the comments of the fire service nationwide in order to improve the content of the final User's Manual and make it more responsive to their needs. In this regard a special 'Comment Form' appears at the back of this document. The reader is encouraged to complete this form and send it directly to the address indicated.

PB83-131631 Not available NTIS
National Bureau of Standards, Washington, DC.
Research and Development: Federal Programs Develop New Arson Technologies.
Final rept.,
Nora H. Jason. Aug 81, 2p
Pub. in Firehouse, p54-55 Aug 81.

As part of the Federal fight against arson, the Center for Fire Research (CFR) at the National Bureau of Standards has a statutory mandate to carry out programs related to scientific aspects of the problem. In cooperation with other Federal agencies, CFR researchers have undertaken several projects. They are the Fire Investigation Handbook, arson sniffers, the psychology of arson, arson laboratory accelerant analysis and decision analysis.

PB83-853960 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Electrical Equipment Safety. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 77p

This bibliography contains citations concerning electrical equipment and its installation in hazardous and potentially hazardous areas. National and international codes and risk assessments are discussed. (Contains 75 citations fully indexed and including a title list.)

PB83-854208 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Security Devices. February, 1978-November, 1982 (Citations from the Energy Data Base).
Rept. for Feb 78-Nov 82.
Nov 82, 198p
Supersedes PB80-855398.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning research and development of security device technology. Nuclear materials management safeguards, nuclear facility entry security, industrial security personnel relative to sabotage and legal aspects, and methods for evaluating safeguards, particularly of nuclear facilities, are discussed. Technological innovations in security hardware are also presented. (This updated bibliography contains 208 citations, 69 of which are new entries to the previous edition.)

PB83-854430 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Aircraft and Spacecraft Fire Detection and Fire Fighting. June, 1974-November, 1982 (Citations from the International Aerospace Abstracts Data Base).
Rept. for Jun 74-Nov 82.
Nov 82, 74p
Supersedes PB81-855256.Prepared in cooperation with the National Aeronautics and Space Administration, Washington, DC.

This bibliography contains citations concerning methods and equipment utilized in the detection and extinguishing of fires on board aircraft and spacecraft. The application of these techniques and devices to aircraft and spacecraft on the ground as well as in flight are discussed. The technology of employing aircraft to fight structure and ground fires is also included. (This updated bibliography contains 67 citations, 38 of which are new entries to the previous edition.)

13M. Structural Engineering

DE82008100 PC **A05**/MF **A01**
Automation Industries, Inc., Silver Spring, MD. Vitro Labs. Div.
Lake Valley Firehouse, South Lake Tahoe, California Solar Energy System Performance Evaluation, March 1981-Jun 1981.
T. F. Eck. 1981, 77p SOLAR/2020-81/14
Contract AC01-79CS30027
Portions of document are illegible.

The Lake Valley Firehouse is a small fire station in California whose active solar energy system is equipped with 572 square feet of liquid flat-plate collectors, a 1200-gallon storage tank, and an auxiliary propane-gas hydronic boiler. The system is designed to supply 50% of the heating and 50% of the hot water, but was found to supply 49% of the space heating and 42% of the hot water for an overall solar fraction of 48%. Other data given include the solar savings ratio, conventional fuel savings, system performance factor, and solar system coefficient of performance. Performance data are presented for the collector, storage, domestic hot water, and space heating subsystems as well as for the overall system. The system energy flow, operation, solar energy utilization, and solar system availability are discussed. Also included are data on the system operating energy, energy savings, and weather conditions. The system, performance evaluation techniques, sensor technology, and site history, problems, and changes in the system are described, and typical data for a month are given. (ERA citation 07:046387)

DE82009508 PC **A09**/MF **A01**
Southern Solar Energy Center, Atlanta, GA.
Code Manual for Passive Solar Design Single Family Residential Construction.
1 Aug 79, 186p SSEC/SP-41102
Contracts FG02-78CS34144, AC02-79CS30166

General information is presented on types of passive solar techniques and a method for estimating passive solar performance. Important codes and standards are described, each description listing the items in the code which could have a potential impact on a passive solar design and analyzing the effect of the code on the use of such techniques. State and local codes and code agencies are summarized. The local summary contains the name of a contact in the enforcement agency to whom specific questions may be addressed. The requirements to file for a building permit are given briefly. (ERA citation 07:053440)

ERATL-83-01 PC**$170.00**
ERA Technology Ltd., Leatherhead (England).
Building Services Automation.
Final rept.,
R. G. Bull, and P. D. W. Baker. Jul 81, 302p GRA-81-84

Automatic systems for controlling building services and energy management are becoming increasingly attractive to users of buildings of quite modest sizes and achieve remarkable pay-back periods averaging less than 15 months. The choice of systems available, usually based on microprocessor technology, is difficult for potential users. This report describes the main systems available and compares 35 case studies of users carefully selected to represent current UK practice. It describes the factors which affected their choice and analyses the benefits obtained compared with those expected.

PB83-107771 PC **A03**/MF **A01**
Centre de Recherches Scientifiques et Techniques de l'Industrie des Fabrications Metalliques, Brussels (Belgium).

Relation between Welding Parameters of a Beam Section and Its Buckling Strength,
A. Plumier. Sep 82, 43p CRIF-MT-143
Trans. of mono. Relation Entre les Parametres de Soudage d'une Colonne et sa Charge de Flambement, n.p., 43p Apr 81. See also N82-12454.

Standardized curves for the calculation of buckling strength are called into question. These curves pertain to different structural members, such as beams and plates. It is demonstrated that for certain fabrication conditions, i.e., manual welding, particularly of I beams, these dimensioning curves give unreliable specifications. The analytical determination of the residual stress distribution in a welded I beam is considered. The evolution of the stress field in a plate being welded is described. Both thin and thick welded plates are dealt with. The method is applied to arrive at parametrical results for the buckling strength of welded sections, allowing the real safety factor to be determined for the defined distribution of welding parameters and cross sections. Complete relations for the calculation of residual stress in various structural profiles are shown.

PB83-108852 CP **T03**
Federal Power Commission, Washington, D.C.
Stability Analysis of Gravity Dam.
Software.
29 Nov 76, mag tape FSWEC-77/0114
Source tape is in EBCDIC character set. Tape(s) can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This program is designed for making stability analysis of gravity dam. The analysis is carried out under the combinations of dead load, hydrostatic pressure, ice load, uplift and/or seismic load whenever applicable. It can be applied to any given shape of dam. ...Software Description: The program is written in the FORTRAN programming language for implementation on an IBM 370 computer using the OS operating system. The computer memory requirement is 4K.

PB83-116228 PC **A03**/MF **A01**
University of Strathclyde, Glasgow (Scotland).
Factors Affecting the Rotational Rigidity of Joints Made with Metal Plates,
E. N. Morris, and S. Gajjar. Aug 80, 31p

Moment-rotation curves for joints subjected to bending are shown and analysed. The principle of a reduced moment is discussed and the effect of the gap between the timber members is considered with tentative design proposals being given for the latter.

PB83-118646 PC **A04**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
Building Technology Project Summaries, 1981-1982.
Special pub.,
Noel Raufaste, and Michael Olmert. Sep 82, 74p
NBS-SP-446-6
See also report for 1980-81, PB82-106105.

Center for Building Technology programs address building construction productivity, structural and geotechnical engineering, building materials, building physics, and building equipment. Typical CBT activities include: investigating failures, such as the Kansas City Hyatt Regency Hotel skywalk collapse, to determine needs for improved design and construction practices; improving measurement techniques, such as development and calibration of a hot-box to accurately determine heat transfer in full-scale complex-work assemblies; defining characteristics of building performance, such as predicting service-life of polymers (a group of materials expected to see much more use during the 21st century); and developing methods to predict the energy performance of new refrigerant mixtures for heat pumps. This report summarizes CBT's research for 1981-1982. Each summary lists the project title, its progress, point of contact within CBT, and sponsor.

PB83-119909 PC **A08**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
A System for Fire Safety Evaluation for Multifamily Housing.
Interim rept.,
H. E. Nelson, and A. J. Shibe. Sep 82, 161p NBSIR-82-2562
Sponsored in part by Department of Housing and Urban Development, Washington, DC.

A qualitative evaluation system for grading multifamily housing in terms of fire safety has been developed and is ready for testing in Department of Housing and Urban Development field offices. The system is designed to be used to identify a variety of combinations of widely accepted fire safety equipment and building construction features that provide a level of safety equal or greater than that achieved by conformance to the explicit requirements of the HUD Minimum Property Standards. In this evaluation, equivalent safety performance is gauged in terms of overall level of safety provided rather than a component by component comparison.

PB83-122572 PC **A09**/MF **A01**
Swedish Council for Building Research, Stockholm.
Energy Usage in the United Kingdom Building Sector,
Andrew Mason, and Jean Shaw. 1982, 187p ISBN-91-540-3759-X, D16:1980

Contents:
- The United Kingdom building industry;
- United Kingdom energy supply and demand, policy and prices;
- Heating and energy conservation in building and new construction;
- The purchase of energy using and conserving equipment and services;
- Current developments in building energy technology (research, development, demonstration and promotion);
- Current developments in energy management and control in buildings;
- Building regulations relevant to energy conservation in domestic and commercial buildings;
- Wind, wave and tidal energy research in the United Kingdom.

PB83-122911 PC **A09**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
Prediction of the Hydraulic Jump Location Following a Change of Slope in a Partially Filled Drainage Pipe,
J. A. Swaffield. May 81, 189p NBSIR-81/2367, HUD-0002281
Prepared in cooperation with Brunel Univ., Uxbridge (England), Drainage Research Group.

The criteria governing the formation of a hydraulic jump in a partially filled fluid conduit downstream of a slope change are presented, together with the necessary techniques to enable water surface profiles and jump location to be predicted. Computer programs designed to model the conditions leading to jump formation under flow and channel scale conditions compatible with current drainage system design are provided. An extensive range of program test conditions were considered within the limit set by parameter values encountered in building drainage system design. It was found possible to explain the movement of jump location with such parameters as flow rate, pipe slope, and roughness in terms of the criteria determining jump formation in near horizontal channels. The computer program, as included, has been designed to deal with rectangular or circular section channels. Extension to other shapes requires only that the shape functions be introduced into the two main subroutines, BOUND and CALC, and that the range of control values assigned to the control variable, SHAPE, be extended accordingly. Four references are included, and the appendixes provide diagrams, the computer programs, and other technical information.

PB83-122978 PC **A13**/MF **A01**
Sealed Insulating Glass Manufacturers Association, Chicago, IL.
Field Correlation of Performance Standards for Organically Sealed Insula Glass,
James L. Spetz. 15 Dec 80, 280p HUD-0002289
Contract HUD-H-5084
Prepared in cooperation with Jim Spetz Testing Lab., Wickliffe, OH.

This study correlates the test performance of Sealed Insulating Glass with its performance in use in buildings in the United States. Approximately 2,000 units in approximately 150 buildings are being tested each year for 5 years. The tests measure the amount of moisture between the two panes of sealed glass and determine the level of performance according to specifications. All common generic type of sealant systems, single and dual seal, are represented among the units tested, as are all three desiccant systems and all common sealed corners and corner key constructions. Findings indicate no visual failures of moisture or fog inside any of the units tested and no visual failures on any of the units on the jobs. Summary data sheets and individual job data sheets with all the frost points for the individual cities for the various tests used are included.

PB83-123018 PC **A06**/MF **A01**
National Bureau of Standards, Washington, DC.
Selected Methods for Condition Assessment of Structural, Heating, Ventilating, and Air Conditioning (HVAC), Plumbing and Electrical Systems in Existing Buildings,
Frank H. Lerchen, James H. Pielert, and Thomas K. Faison. Nov 80, 111p HUD-0002297

This report lists and describes technical condition assessment techniques currently available to assess the following building systems: structural; heating, ventilating, and air conditioning (HVAC); electrical; and plumbing. This information can assist the building owner, designer, builder, or regulatory official in making decisions on the type and magnitude of modifications required in a building undergoing rehabilitation. Summary tables or brief discussions are provided of the principles involved in using each technique. Included with each description is a listing of advantages and limitations of the techniques and references to additional information. Technical evaluation methods are outlined for such structural materials as concrete, wood, metals, and masonry. Tests for HVAC systems cover those for building envelopes and interiors. Tests for plumbing systems components, for drainage and vent systems, for electrical branch circuits, and for electrical circuits are also included. A general evaluation plan is pictured.

PB83-123059 PC **A14**/MF **A01**
Sealed Insulating Glass Manufacturers Association, Chicago, IL.
Insulating Glass Field Correlation Study 1981,
James L. Spetz. 21 Sep 81, 316p HUD-0002305
Contract HUD-H-5084
Prepared in cooperation with Jim Spetz Testing Lab., Wickliff, OH.

This study correlated the ASTM (American Society of Testing Materials) E6P3 test performance of sealed insulating glass with its performance in use in buildings in the United States. Since 1967, industry manufacturers have been certifying sealed insulating glass through the Sealed Insulating Glass Manufacturer Association (SIGMA). Certification requires two unannounced inspections a year and one test. For this study, approximately 2,000 units in about 150 buildings are being tested each year for 5 years in Cleveland, Ohio; Boston, Mass.; Atlanta, Ga.; Tampa, Fla.; Dallas, Tex.; Phoenix, Ariz.; Lake Tahoe, Nev.; San Francisco, Calif.; Portland, Oreg.; Seattle, Wash.; Billings and Bozeman, Mont.; Denver, Colo.; and Minneapolis, Minn. A running performance of each unit is recorded using frost - point measurement as the control for performance. This test measures the amount of moisture between the two panes of sealed glass. To date, the survey is showing units from 0 to 4 years old that are certified and performing very well in the field. However, there is general consensus in the industry that significant early failure occurs in units in less than 5 years. Most of these failures are reported in the residential market when a very low - cost product is used that is not tested or certified. The report concludes that testing and certification is providing the consumer with a better product. Most of the report is comprised of technical tables giving study data summaries. (Author abstract modified).

PB83-123299 PC **A12**/MF **A01**
Drexel Univ., Philadelphia, PA. Dept. of Civil Engineering.

Nature and Mechanism of Progressive Collapse in Industrialized Buildings. Report 3: Analytical Investigation of the Internal Load Distribution and the Mechanism of Progressive Collapse in Precast Concrete Large Panel Buildings,
John C. Muskivitch, and Harry G. Harris. Jun 81,
260p HUD-0002333
Contract HUD-H-2589

The effects of joint details and joint behavior on the mechanism of progressive collapse in large - panel, precast, concrete buildings was studied using both the finite element method and simple analytical models. A finite element computer code was developed to include elements which would aid in the modeling of unique characteristics of joints and joint behavior found in large panel buildings. Changes in the overall behavior of these details through the loading history of the damaged wall assembly were incorporated into the nonlinear incremental capability of the code. The bond - slip behavior of the joint reinforcement, the shear - slip behavior of the horizontal joint, and the adequacy of the vertical support provided for a wall were found to be critical aspects of joint behavior. The proper functioning of these details contributes to the ability of the damaged structure to sustain abnormal loading and reduce the possibility of excessive displacement and premature failure. Graphs and diagrams are included. Discussions of material and element stiffness, the transfer force method (a means by which unbalanced overstress can be redistributed throughout a structure), and computer codes used are appended, along with 68 references. (Author abstract modified).

PB83-123802 PC **A16/MF A01**
Bureau of the Census, Washington, DC.
Annual Housing Survey: 1979. United States and Regions. Part F: Energy-Related Housing Characteristics.
Mar 82, 375p HUD-0002414

This report presents statistics on energy - related housing characteristics from the 1979 Annual Housing Survey for the United States by inside and outside standard metropolitan statistical areas (SMSA's) and each of the four geographic regions. The statistics are based on information from a sample of housing units. The information was collected by personal interview from September 1979 to December 1979. For the United States as a whole and for the separate regions (North Central, Northeast, South, and West), data are presented on fuel, fuel cost, heating, air conditioning, insulation, and transportation characteristics in relation to the following information: income of families and primary individuals, value of owner - occupied housing units, gross rent of renter - occupied housing units, housing units in structure, number of rooms per housing unit, year structure built, monthly cost paid for electricity, and others. Also shown are the yearly cost paid for fuel oil, coal, etc. and household head's principal means of transportation to work, by distance and travel time to work in 1979. Data are classified according to all races, black - housing units with black household head, and Spanish - housing units with household head of Spanish origin. Maps and a table - finding guide are provided. Appendices describe the geographic area classifications; define subjects covered in the report; and present information on sample design, estimation, and data accuracy.

PB83-123869 PC **A04/MF A01**
Building Technology, Inc., Silver Spring, MD.
Building Regulations and Existing Buildings: Problems With Existing Building Regulatory Techniques.
06 Mar 81, 61p HUD-0002427
Contract HUD-H-5196

This is one of three state - of - the - art reports on building regulations and existing buildings; it focuses on the problems with existing building regulatory techniques. The quality of existing housing stock is viewed as a central concern for community development policy. Regulation is one of the public actions that affects the condition of housing, but its effect may be impeded by attitudes of regulatory personnel, organizational separation, and a variety of codes and regulations. Organizational factors and roles affecting regulation of existing buildings include the nature of the building department, the fire prevention bureau, housing code enforcement, the health department, and specialty agencies. Generic code administration and enforcement activities comprise recordkeeping, access and review, keeping up with occupancy or use changes, triggering mechanisms, inspection, prosecution of violators, training of occupants and public education, and code maintenance and change. Legal and statutory issues related to the regulation of existing buildings concern constitutionality of housing codes and the question of whether the statutes upon which the code enforcement programs are based do in fact help achieve local existing building policies. The problem of devising effective existing building regulatory techniques is one of applying a rigorous approach to analyzing local conditions and devising strategies which optimize use of the existing building stock, together with other community resources in achieving local developmental policies and goals, while maintaining appropriate public safety, health, and welfare. Reference notes and an appendix presenting materials on the Dade County, Fla., recertification program are furnished.

PB83-123877 PC **A08/MF A01**
Building Technology, Inc., Silver Spring, MD.
Building Regulations and Existing Buildings: Evolution of Building Regulations in the United States.
31 Aug 81, 161p HUD-0002428
Contract HUD-H-5196

This is one of three state - of - the - art reports on building regulations for existing buildings, with a focus on the evolution of building regulations. A general discussion of the types of building regulations covers planning, building construction, building maintenance and use, and retroactive regulations. The historic overview of regulations development highlights organizations developing or promulgating codes. Among these are organizations related to fire safety, organizations involved in the national electrical code, and those active in the housing area. Model code organizations are also discussed, as is the role of professional societies and associations in developing or promulgating codes, activities of the National Bureau of Standards, and other Federal agencies, and city and State involvement in code establishment. The basic attributes of the codes that have evolved to this day are explained for the categories of fire safety; accident safety, health, and sanitation; structural safety, and electrical safety. References are given to specific codes. Appendixes contain comparisons by code for various categories.

PB83-123885 PC **A06/MF A01**
Building Technology, Inc., Silver Spring, MD.
Building Regulations and Existing Buildings: Existing Buildings and Building Regulations. Appendix B.
21 Jun 81, 123p HUD-0002429
Contract HUD-H-5196

This appendix to a state - of - the - art report gives chronological summaries of technological developments and research studies related to building characteristics affecting accident safety, health, sanitation, and electrical safety. Summaries of events and research related to light begin with a description of the establishment of street lights in the 19th century and describe research on light intensities for school rooms and other structures, comparisons of natural and artificial light, and the effects of window glass on different types of light. Similar chronologies focus on ventilation, space and dimensions, potable water, plumbing fixtures, privacy, heating, basements and cellars, and glazing. Additional sections present findings related to plumbing; stairs; unregulated health hazards such as lead - based paint and asbestos; unregulated safety hazards including bathtubs and showers, windows, slip resistance, floor furnaces, and nonemergency exits. The development of building standards in England is also covered. Each summary includes a bibliographic citation. Figures are provided.

PB83-123893 PC **A03/MF A01**
Building Technology, Inc., Silver Spring, MD.
Building Regulations and Existing Buildings. Case Study: Portland, Oregon.
26 Aug 81, 44p HUD-0002430
Contract HUD-H-5196

This case study reports on Portland, Oreg.'s, system for building regulation in existing buildings. Portland, is one of the oldest communities on the West coast with an inventory of older housing stock, a history of housing and building codes dating from the 1890's, and a strong fire prevention program. Classifications and provisions of the codes are delineated in terms of fire safety, accident safety, health and sanitation, structural safety, and electrical safety. Discussion of code administration and enforcement program traces the city's regulatory response history and highlights basement fires, retroactive fire safety requirements for apartments and hotels, highrise retroactive regulations, and smoke detectors in single family dwellings. Among Portland's strengths are concentration tasks whose activities are generally reactive, i.e., responding to permit applications or complaints, good communications between officer personnel and field staff, and a positive outreach program. Weaknesses include excessive appeals, unstructured housing code enforcement, retroactive ordinances weakened by the political process, and a lack of peace officer status. Portland's creativity is reflected by homeowner evenings for group discussion of compliance, a structural advisory committee for technical advice, and a preliminary meeting regarding compliance issues before design decisions are made. The above three features, together with fire department checkers in the building department are characteristics of Portland's program that may be transferable to other communities. Appendices include persons interviewed, and selected code data. Tabular and graphic data are supplied.

PB83-123901 PC **A04/MF A01**
Building Technology, Inc., Silver Spring, MD.
Building Regulations and Existing Buildings. Case Study: Miami, Florida.
30 Sep 81, 69p HUD-0002431
Contract HUD-H-5196

This report examines the Miami, Fla., building regulations and their administration and enforcement, with emphasis on desirable features which would be transferable to other communities. Miami was selected because of its growing population, its inventory of old buildings combined with extensive rehabilitation construction, and its assignment of responsibility for the Building and Zoning Inspection Department to a fire chief who acts as an assistant city manager. A description of community features covers the climate, topography, population, building types, and fire statistics. A review of the code's history and administration focuses on the review of planning, inspection, and licensing for new construction; regulations governing change of occupancy, additions, alterations, and retroactive code provisions; and the existing buildings inspection and recertification process. Findings indicated that the division of responsibilities among governmental bodies is clearly drawn and that the preliminary planning, plan review, and construction inspection processes function very efficiently. However, requests for code exceptions involve lengthy delays, and the recertification process is not always effective. Communication within and between all agencies appears to be as clear and effective as it needs to be. Several aspects of the Miami program reflect both creativity and realism in addressing the city's characteristics. Transferable program features are the periodic structural inspections of older buildings, preliminary plan review for a fee that can be applied against a building permit fee, prerequisite inspections when buildings are periodically licensed, the placement of the building department and fire department under a single responsible official, and the training of fire fighters in fire prevention and inspection methods. A chart and an appendix listing the names of persons interviewed for the study are provided.

PB83-123919 PC **A04/MF A01**
Building Technology, Inc., Silver Spring, MD.
Building Regulations and Existing Buildings. Case Study: Buffalo, New York.
26 Aug 81, 52p HUD-0002432
Contract HUD-H-5196

This report examines the Buffalo, N.Y., building regulations and their administration and enforcement, with emphasis on desirable transfer to other communities. Buffalo was chosen as one of three cities for such a case study because of its northeast location, its extensive inventory of older buildings, extensive rehabilitation activity in both the commercial and residential sectors, and its maintenance of its own building code for the past 85 years. A description of community features covers the city's climate, topography, population, building types, and fire statistics. A review of the code's history and administration focuses on the regulatory response regarding multiple dwellings, high rises, and smoke detectors; plans and inspection / licensing for new construction; regulations governing rehabilitation, change of use or occupancy, alterations, additions, and retroactive code provisions; and code requirements for existing buildings. Analysis of Buffalo's strengths and weaknesses revealed that the lines

of communication are simple and direct within but not between departments. The functioning of city agencies appears to favor construction rather than the regulation of existing buildings. Except for the code exceptions process and the activities of the Neighborhood Revitalization Division, the system's activities are relatively well protected from political pressure. Several aspects of the Buffalo program are noteworthy because of their creativity and realism in addressing the city's characteristics. Transferable features are the use of a legislative process for authorizing exceptions to the code; a cooperative partnership between citizen organizations and government to identify and deal with housing code violations; the use of a housing court that provides assistance in getting violations corrected; and the provision of free house paint to homeowners requesting it, based on the premise that freshly painted exteriors will improve an areas image and encourage property owners to maintain their buildings.

PB83-123927 PC **A04**/MF **A01**
Building Technology, Inc., Silver Spring, MD.
Building Regulations and Existing Buildings: Techniques for Assessing Safety and Health in Buildings.
30 Sep 81, 56p HUD-0002433
Contract HUD-H-5196

Techniques for assessing safety and health conditions in buildings are discussed, including the identification of research where these techniques are currently inadequate. These techniques should be adopted as an integral part of an effective regulatory system for existing buildings. The safety aspects considered are fire safety; accident safety, health, and sanitation; structural safety, and electrical safety. Fire safety evaluation techniques include effectiveness statements, a structural and fire evaluation model, and partial techniques such as fire hardening of residential buildings in high risk urban communities and an egress guideline for residential rehabilitation. Research needs in this area relate to validation of assessment models, monitoring the application of the models, and analysis of the intent of building code fire safety regulations. Considerations of health and safety hazards concern light and ventilation, space and dimensions for privacy, heating, sanitary facilities, plumbing, stairs, floor slipperiness, elevators, and other building features. Research needs in this area are for a better understanding of the health impacts of community regulated building attributes. Structural safety techniques feature the fire evaluation model and rehabilitation guidelines along with partial techniques such as enforcement of hazard abatement codes. Research needs here are based on monitoring application of the model and guide and formulating a catolog of archaic structural systems. Components of electrical safety cover nonbuilding variables such as occupant behavior and environmental factors as well as use of an electrical guideline and model for residential rehabilitation. A 21 - item bibliography is supplied.

PB83-123935 PC **A03**/MF **A01**
Building Technology, Inc., Silver Spring, MD.
Building Regulations and Existing Buildings: Improved Techniques for Regulation of Existing Buildings.
30 Sep 81, 42p HUD-0002434
Contract HUD-H-5196

This report outlines the generic elements and component activities of an effective system for regulating existing buildings. It also outlines an approach for establishing such a system in a community. An effective system recognizes the general, organizational, operational, and educational features, the special resources, and the social supports involved. General features include attitudes of regulatory officials, the proliferation of regulatory organizations as well as the proliferation of regulatory codes and statutes, and the monitoring and evaluation procedures. Operational features include recordkeeping, access, and review, monitoring occupancy and use changes, triggering mechanisms, inspection, prosecution of violators, training of occupants and public education, and code maintenance and change. Extending regulatory personnel and information are treated as special resources. Supports stem from the political, statutory, legal and public spheres. The process for establishing a locally appropriate and effective regulatory system for existing buildings requires data on existing regulatory systems with comparisons of regulations for existing and new buildings as well as on general community and building characteristics. Data analysis should yield a model synthesis of a regulatory system for existing buildings, to be followed by program implementation. Research needs include interdisciplinary local level discussions, case studies of effective regulatory programs, and attention to special problems of smaller jurisdictions. An 8 - item bibliography is given.

PB83-123943 PC **A04**/MF **A01**
Building Technology, Inc., Silver Spring, MD.
Building Regulations and Existing Buildings: Final Report.
19 Feb 82, 65p HUD-0002435
Contract HUD-H-5196

This study provides the context for HUD's Rehabilitation Guidelines and addresses the problem of controlling the safety and health of the entire existing building stock, in addition to stock being rehabilitated. Building codes have generally evolved by becoming more voluminous and detailed. In general, it is likely that older buildings will not meet all current code requirements. Regulating buildings at the local level is beset by the overriding problems of appropriate attitude of officials, multiplicity of regulatory agencies and jurisdictions, and multiplicity of codes. Although a single model regulatory system for the entire United States is impossible (because conditions differ too much in different parts of the country), a rigorous approach is needed to develop locally appropriate regulatory systems in any given community. The evolution of building regulation in Buffalo, N.Y.; Miami, Fla.; and Portland, Oreg.; displays substantial deviations from the evolution of the national model codes, thereby highlighting the difficulty of drawing meaningful conclusions from analysis of national model trends. The study presents a rigorous approach to developing an effective regulatory system for local jurisdictions which consists of organizational, operational, and educational features, as well as special resources and supports. Specific research recommendations are made in order to implement this development approach. Maps are provided. (Author abstract modified).

PB83-124065 PC **A03**/MF **A01**
Department of Housing and Urban Development, Washington, DC. Office of Policy Development and Research.
Selected Background Papers: Housing Construction Codes and Standards.
Nov 81, 40p HUD-0002451

This document contains five papers, each of which focuses on a different aspect of construction codes and standards. One paper examines the background leading up to congressional approval of development and promulgation of mandatory building energy performance standards (BEPS) and subsequent modification of the BEPS to "voluntary" standards. Another paper discusses manufactured housing construction and safety standards with special attention to revision of Federal standards, how the Federal standards relate to those in the private sector, and if the standards meet minimum health and safety concerns. The history and influence of the HUD single - family Minimum Property Standards is described, and the development of the One and Two Family Dwelling Code is discussed. Additional papers (1) consider building product approval systems for innovations and procedures to determine compliance with standards and (2) review the private sector standards development process in relation to how these standards can be used for Federal purposes. Each paper presents background information, a statement and analysis of issues, and options. Some references are given.

PB83-124081 PC **A02**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
Improving Building Regulations for Rehabilitation,
James G. Gross. Sep 81, 22p HUD-0002453

This paper provides an overview of building regulations applied to rehabilitation. It discusses constraints due to regulation, recent technical activity to improve rehabilitation regulation, and needed research to permit more effective use of the existing building stock. A study by the National Bureau of Standards Center for Building Technology identified several regulatory problems. Most codes contain administrative provisions stating that a building's conformance with the requirements of the building code for new construction should increase in relation to the dollar amount of rehabilitation planned (e.g., the 25 - 50 percent rule); compliance is very expensive. The building codes for new construction presents difficulties because they may not address the types of construction present in many older buildings and they are structured to follow the new construction process where the building is designed to comply with established requirements. The technical base of some codes has been questioned, and they limit innovative solutions because building officials feel there is a lack of technical flexibility to allow code deviations. Several technical inputs are required to alleviate these regulatory problems: (1) evaluation of technical constraints in current codes for various occupancies to determine validity or provide basis for removal; (2) development of a comprehensive set of performance requirements for existing buildings; and (3) preparation of a catalog of building systems no longer in use for evaluating the performance of archaic systems against code requirements. HUD Model Rehabilitation Guidelines are listed, and research needs for building rehabilitation are noted, including test methods, analytical procedures, field inspection guidelines, and economic considerations. Two figures and five references are provided.

PB83-124347 PC **A12**/MF **A01**
Perkins and Will, Inc., Washington, DC.
Evaluation of the Physical Condition of Public Housing Stock. Volume 1: Final Report.
Final report.
31 Mar 80, 271p HUD-0002627
Contract HUD-H-2850
Prepared in cooperation with the Ehrenkrantz Group, Washington, DC.

This report summarizes a 2 - year study pertaining to modernization, accessibility, and energy conservation in public housing stock. It developed cost estimates to upgrade public housing to three levels of modernization. Level I required the correction of all basic safety and health standards. Level II included the cost of correcting all level I violations as well as all violations of HUD Minimum Property Standards modified to reflect the special conditions of modernization. Level III covered the cost of selected modernization improvements to make projects more habitable, easier to maintain, or more attractive. The national estimate (in 1980 dollars) for level I improvements for 1.17 public housing million units was about $260 million. For level II, the national estimate was $1.506 billion, and for level III, $6.791 billion. The study also developed cost estimates to upgrade public housing to fulfill the national barrier - free legislation requirements. Estimates for major categories of disabilities are delineated for making 58,650 units accessible. In the last area, energy conservation, estimates were developed of the costs and benefits (expressed in terms of discounted payback periods) required to implement a comprehensive list of energy conservation measures in public housing. Tables, figures, and photographs are supplied. Methodology and statistical analyses are appended. (Author abstract modified).

PB83-124354 PC **A23**/MF **A01**
Perkins and Will, Inc., Washington, DC.
Evaluation of the Physical Condition of Public Housing Stock. Volume 2: Modernization.
31 Mar 80, 530p HUD-0002628
Contract HUD-H-2850
Prepared in cooperation with the Ehrenkrantz Group, Washington, DC.

This volume of the final report on the physical condition of public housing stock contains modernization design criteria / standards, a modernization survey instrument, and a modernization cost file -- work items. The proposed modernization of the current stock of public housing shall be implemented to achieve conformance with three levels of standards of health, safety, and liveability. Level I includes emergency work items, Level II includes items in level I and those rehabilitation items required by HUD Minimum Property Standards, and level III includes items beyond level II such as amenities to improve maintenance and enhance liveability. The standards are organized by categories representing major building elements, including site, structure and mechanical systems, exterior, interior, specialties, and equipment. Each category consists of distinct components with individual sets of standards, and one section of general standards to be met by all components within that category. The three levels of modernization are noted in succession within each component for comparison of level compliance and direct reference to the survey instrument. The standards are only for existing buildings. About 25 references are supplied. (Author abstract modified).

PB83-124362 PC **A25**/MF **A01**
Perkins and Will, Inc., Washington, DC.
Evaluation of the Physical Condition of Public Housing Stock. Volume 3: Accessibility.
31 Mar 80, 592p HUD-0002629
Contract HUD-H-2850
Prepared in cooperation with the Ehrenkrantz Group, Washington, DC.

This manual has been designed to enable any public housing authority (PHA) to implement the minimum requirements for handicapped accessibility as required by HUD regulations. It is a working tool to be used in conjunction with ANSI Standard A117.1 (1979) and the most recent HUD regulations on compliance with Section 504 of the Rehabilitation Act of 1973. The manual provides a general introduction to the concept of accessibility for the handicapped and a brief legislative history behind the legal rights of the handicapped. In addition, two ongoing HUD programs, one a survey of public housing and the other a barrier - free demonstration program, are described. The HUD 3 - year transition plan for making public housing accessible for and usable by the handicapped is detailed, and a series of design principles for accessibility are discussed. These include the concepts of independent living, mainstreaming, reasonable choice, options for achieving accessible housing, HUD's minimum requirements, and general accessibility guidelines. A methodology for determining what the needs of the disabled are in the PHA's local community is outlined in detail, as is the process for analyzing the results of a local survey of the needs of the disabled. Concluding chapters provide a method for surveying a PHA's housing stock to determine its relative degree of accessibility, explain how to design for accessibility, and show how to establish a time schedule and cost for construction. Tables, drawings, and a bibliography are provided. An accessibility survey, worksheets, and supplemental design criteria are appended.

PB83-124370 PC **A16**/MF **A01**
Perkins and Will, Inc., Washington, DC.
Evaluation of the Physical Condition of Public Housing Stock. Volume 4: Energy Conservation.
31 Mar 80, 352p HUD-0002630
Contract HUD-H-2850
Prepared in cooperation with the Ehrenkrantz Group, Washington, DC.

This report assesses the existing energy consumption and energy conservation potential in the Nation's public housing stock. It presents recommended levels of energy saving investment costs based on a cost / benefit analysis. The cost of energy in the public housing stock for 1980 is expected to exceed $740 million, which averages out to over $670 per dwelling unit. The analysis of the total public housing stock was completed in a two - phases survey and analysis process. A total of 350 randomly selected projects were surveyed, and 95 of these were selected for detailed energy analysis. A set of algorithms was developed to determine existing energy use. Following this, potential energy conservation opportunities (ECO's) were analyzed and refined. Energy savings, cost, and discounted payback were estimated for each ECO for all 95 projects, producing over 5,000 results. A method to organize the projects by significant categories of building type and climate was devised. Existing energy use was calculated, using standard algorithms such as those described in engineering manuals. After yearly energy consumption was calculated for each project and prototype, 58 ECO's were analyzed for each project. Based upon this analysis, graphs were produced to illustrate diminishing return of investment. In addition, a separate but coordinated solar analysis to assess potential solar retrofit in public housing was completed. Tables and illustrations are given.

PB83-124602 PC **A15**/MF **A01**
Illinois Univ. at Urbana-Champaign. Dept. of Civil Engineering.
Effect of Ground Motion Characteristics on the Seismic Response of Torsionally Coupled Elastic Systems.
Civil engineering studies,
Shyh-Yuan Kung, and D. A. Pecknold. Jun 82, 340p
UILU-ENG-82-2009, STRUCTURAL RESEARCH SER-500, NSF/CEE-82038
Grants NSF-ENV77-07190, NSF-PFR80-02582

A probabilistic approach to a study of the effects of ground motion on torsionally coupled elastic systems is presented. The characteristics of ground motions are discussed and frequency content, time varying intensity and duration, and direction are modeled. Isolated acceleration pulses and ground motion spatial correlation characteristics are illustrated with a simple white noise model. The methods used for computing structural responses to the ground motion models are described and an algorithm is devised for evaluating the nonstationary response statistics of general multi-degree-of-freedom systems to the excitations of various models. The effects of various ground motion characteristics on single-degree-of-freedom systems are considered as are the effects of ground motion on the response of single-story torsionally coupled systems. Also noted are the responses of a special class of torsionally coupled tall buildings. A numerical example for an eight-story building is provided.

14. METHODS AND EQUIPMENT

14B. Laboratories, Test Facilities, and Test Equipment

ERATL-83/03 PC**$17.00**
ERA Technology Ltd., Leatherhead (England).
The Practical Realization of Temperature Measurement Standards in High Temperature Mechanical Testing.
M. P. E. Desvaux. 1981, 28p ERA-81-142
A paper presented at the SPL Conference on 'Measurement of High Temperature Mechanical Properties of Materials' on 2-5 June 1981.

This paper deals with the use of Pt-Pt 13% Rh thermocouples in large creep laboratories. It surveys current practice as an international interpretation of standards and discusses the implications of drift and depth of immersion effects on methods of using these thermocouples. Current standards are discussed and suggestions made as to how these could be improved.

N82-33404/6 PC **A15**/MF **A01**
General Electric Co., Schenectady, NY.
Design Concepts and Cost Studies for Magnetic Suspension and Balance Systems.
Final Report, Nov. 1980 - Mar. 1981.
H. L. Bloom. Jul 82, 347p NAS 1.26:165917, REPT-81LSP47251, NASA-CR-165917
Contract NAS1-16000
Prepared for Kentron International, Inc., Hampton, VA.

The application of superconducting magnets for suspension and balance of wind tunnel models was studied. Conceptual designs are presented for magnetic suspension and balance system (MSBS) configurations compatible with three high Reynolds number cases representing specified combinations of test conditions and model sizes. Concepts in general met initially specified performance requirements such as duty cycle, force and moment levels, model angular displacement and positioning accuracy with nominal design requirements for support subsystems. Other performance requirements, such as forced model sinusoidal oscillations, and control force magnitude and frequency, were modified so as to alleviate the magnitude of magnet, power, and cryogenic design requirements.

N82-33405/3 PC **A04**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Cryogenic Wind Tunnels: A Selected, Annotated Bibliography.
M. H. Tuttle, and R. A. Kilgore. Sep 82, 62p NAS 1.15:84474, L-15335, NASA-TM-84474
Supersedes NASA-TM-80168 and NASA-TM-80168-Suppl-1.

There are 277 entries, 110 of which were added in this updated version. Selection for inclusion was made with consideration of usefulness to persons interested in building or using a cryogenic wind tunnel.

N82-33698/3 PC **A03**/MF **A01**
Applied Research, Inc., Huntsville, AL.
Beta Experiment Flight Report.
Progress Report.
Aug 82, 29p NAS 1.26:170622, NASA-CR-170622
Contract NAS8-34337

A focused laser Doppler velocimeter system was developed for the measurement of atmospheric backscatter (beta) from aerosols at infrared wavelengths. The system was flight tested at several different locations and the results of these tests are summarized.

N82-33699/1 PC **A09**/MF **A01**
Applied Research, Inc., Huntsville, AL.
Beta Experiment.
Final Report.
Jun 82, 170p NAS 1.26:162087, NASA-CR-162087
Contract NAS8-34337

A focused laser doppler velocimeter (LDV) system was developed for the measurement of atmospheric backscatter (beta) from aerosols at infrared wavelengths. A Doppler signal generator was used in mapping the coherent sensitive focal volume of a focused LDV system. System calibration data was analyzed during the flight test activity scheduled for the Beta system. These analyses were performed to determine the acceptability of the Beta measurement system's performance.

N82-33726/2 PC **A10**/MF **A01**
Korea Advanced Energy Research Inst., Seoul.
Development of Nondestructive Testing Technique. Ultrasonic Testing and Radiographic Testing.
Y. P. Lee, K. K. Ryoo, H. S. Ahn, Y. M. Chung, and S. C. Kang. 1980, 216p DE82-700448, KAERI/RR-262/80
In Korean; English Summary.

The feasibility of determining defect size by ultrasonic testing with artificial reference block and maximum echo was investigated. The design and fabrication of the various necessary calibration blocks used were carried out according to existing ASME code and standard. A container for Co-60, 10 Ci was designed to apply the radioisotope for radiographic testing. Neutron radiographic testing using thermal neutron flux (1.7 x 10 to the 6th - 7th power N sq cm/sec) produced from the reactor (250 KW) was attempted and compared with X-ray radiographic testing. The thickness of boiler tubes for a paper mill was successfully measured.

PAT-APPL-6-374 760 PC **A02**/MF **A01**
Department of the Navy, Washington, DC.
Leak Detector.
Patent Application,
Edward Graham. Filed 2 Jul 82, 12p AD-D009 750/1
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

This document describes a liquid detector or liquid differentiator which functions to detect the presence of a liquid such as water or fuel oil in a missile or other device. A light emitting diode is used as a light detector. The light source and light detector are separated by a first and second light refracting medium. The first medium is chosen to have a critical index of refraction eta 1 greater than 1.0 and a critical angle of incidence theta at which refraction ceases and reflection begins. The second medium is chosen to have an index of refraction eta 2 such that light at the interface between the first medium to the second medium is totally reflected. The second medium can be an air gap such that when no foreign fluid is present in the air gap the light beam from the light emitting diode is reflected at the interface of the first and second mediums. When a foreign fluid is introduced into the second medium or air gap by a leak, eta 2 changes to be greater than eta c and the light beam is transmitted through the second medium and detected by the photodetector, indicating the presence of a leak. (Author)

PAT-APPL-6-393 246 PC **A04**/MF **A01**
Department of the Navy, Washington, DC.

Directional Line-Hydrophone Array Calibrator.
Patent Application,
Joseph F. Zalesak, and Peter H. Rogers. Filed 29 Jun 82, 73p AD-D009 753/5
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

The document describes a calibrator for determining the directivity pattern and complex sensitivity of a line hydrophone array including a calibration chamber, filled with a selected fluid, for sealing the array therein. Projectors, for generating acoustic waves, and monitors, for measuring the amplitude and phase of acoustic waves incident thereon, are mounted within the chamber. The projectors and monitors are connected to a computerized control circuit that drives the projectors to generate a calibration wave, with a predetermined amplitude and phase relative to the center of the array, corresponding to a free plane wave incident at an angle theta to the axis of the chamber.

PAT-APPL-6-393 972 PC **A03**/MF **A01**
Department of the Navy, Washington, DC.
Fiber Optic Spectrophone.
Patent Application,
Gary L. Trusty, and Daniel H. Leslie. Filed 30 Jun 82, 29p AD-D009 744/4
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

The present invention relates to a novel fiber optic spectrophone device for the measurement of the optoacoustic absorption coefficients of gases under irradiation by laser sources. A gas sample, contained within a spectrophone, is irradiated with a modulated beam of radiant energy which produces an acoustic pressure wave within the gas sample at the modulation frequency having an intensity related to the degree of absorption of the beam by the gas sample. The spectrophone includes a plurality of turns of optical fiber wound about a compliant cylinder. The acoustic pressure wave is coupled by the compliant cylinder to produce changes in the optical length of the fiber in response to the intensity of the pressure wave. The changes in length of the fiber are detected by an all-fiber Mach-Zehnder interferometer which produces an output representative of the pressure wave. The interferometer includes a compensation system for compensating for the effects of environmental perturbations on the system.

PAT-APPL-6-400 571 PC **A02**/MF **A01**
Department of Commerce, Washington, DC.
Systems for Monitoring Changes in Elastic Stiffness in Composite Materials.
Patent Application,
Ronald D. Kriz. Filed 22 Jul 82, 16p PB83-108779
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

The invention relates to methods and apparatus for measuring and testing the condition of composite materials. More particularly it relates to ultra-sound systems for determining and measuring stiffness degradation of fiber/matrix composite structures whether caused by moisture, heat or cold, radiation, chemicals, or any other source of degradation.

PB83-107011 PC **A06**/MF **A01**
National Bureau of Standards, Washington, DC. National Engineering Lab.
A Fast Response, Low-Frequency Sampling Voltmeter.
Final rept.,
Barry A. Bell, Bruce F. Field, and Thomas H. Kibalo. Aug 82, 116p NBS-TN-1159
Sponsored in part by Department of Defense, Washington, DC.

A low-frequency voltmeter utilizing a sampling technique implemented with microprocessor-based electronics has been developed to perform as a true rms ac voltmeter and distortion analyzer. The instrument makes measurements accurate to plus or minus 1 percent (of reading) of the fundamental frequency, total harmonic distortion, and true rms voltage of approximately sinusoidal inputs from 2 mV to 10 V and frequencies from 0.1 to 120 Hz. A major feature of this instrument is the special window crossing and error function algorithms which provide a software means for completing a measurement within two signal periods at frequencies below 10 Hz.

PB83-107920 PC **A02**/MF **A01**
National Inst. for Occupational Safety and Health, Cincinnati, OH.
Evaluation of Environmental Instrumentation (Black Globe Thermometer) Project 036-01.
1982, 21p

The effectiveness of a 2 inch diameter black globe thermometer was evaluated. Stabilized temperatures and response time for 2, 4, and 6 inch diameter globes were determined by placing the globe in a radiant field and air stream. Results were compared with thermocouple configurations and a mercury in glass thermometer.

PB83-109215 PC **A02**/MF **A01**
National Mechanical Engineering Research Inst., Pretoria (South Africa). Geomechanics Div.
Measuring Plane States of Stress with Regular Strain Gauge Rosettes,
F. A. Vreede. Oct 81, 17p CSIR-ME-1731, ISBN-0-7988-1484-5

It is common practice to measure a plane state of stress by means of strain guage rosettes. In this report it is shown that the regular arrangement of the guages is to be preferred, because the stresses can be calculated with simple formulae, whatever the number of guages, the standard deviations of normal and shear stress results are independent of the direction of these stresses, the accuracy of the measurements can be obtained easily from a series of tests.

PB83-109652 PC **A03**/MF **A01**
National Bureau of Standards, Washington, DC.
An Accuracy Statement for a Facility Used to Calibrate Static Pressure Transducers and Differential Pressure Transducers at High Base Pressure,
C. F. Sindt, and J. F. LaBrecque. Feb 82, 45p NBS-TN-1052
See also PB82-263625. Sponsored in part by American Gas Association, Inc., Arlington, VA. and Gas Research Inst., Chicago, IL.

A facility has been developed to calibrate pressure transducers that are used in the NBS Gas Mass Flow Facility. Both static and differential pressure transducers can be calibrated. An air dead weight tester is the standard for static transducers in the range from 3.8 to 4.5 MPa. An air dead weight tester is also the standard for the differential pressure transducers in the range of 2.5 kPa to 50 MPa; a cistern manometer provides the transfer for the standard to a base operating pressure of 4.1 MPa. The calibration of the air dead weight gage adds plus or minus ppm to the calibration of the cistern manometer. This, plus the uncertainties in the high pressure corrections to the cistern manometer and our measurement of the mercury temperature, contributes plus or minus ppm to the uncertainty of the differential pressure transducer calibrations.

PB83-111658 PC **A04**/MF **A01**
National Bureau of Standards, Boulder, CO. National Engineering Lab.
Metrology for Electromagnetic Technology: A Bibliography of NBS Publications,
R. A. Kamper, and K. E. Kline. Aug 82, 64p NBSIR-82-1677
See also COM73-11971.

This bibliography lists the publications of the personnel of the Electromagnetic Technology Division of NBS in the period from January 1970 through December 1981. A few earlier references that are directly related to the present work of the division are included.

PB83-115428 PC **A02**/MF **A01**
Office of Radiation Programs, Las Vegas, NV.
Radiofrequency Measurements Workshop, November 3-5, 1980.
Workshop summary,
Richard A. Tell. Jul 82, 18p EPA-520/2-82-010

Experiences with the use, application, design, and limitations of currently available instrumentation for assessing potentially hazardous electromagnetic fields are discussed. Field and laboratory tests were conducted in order to compare differing instruments and measurement techniques under identical field and test conditions. Emphasis was placed on broadband survey types of instruments as opposed to more sophisticated, narrowband measuring equipment.

PB83-115568 PC **A03**/MF **A01**
National Bureau of Standards, Washington, DC. National Measurement Lab.
Standard Reference Materials: A Standard Reference Material Containing Nominally Five Percent Austenite (SRM 485a).
Special pub. (Final),
G. E. Hicho, and E. E. Eaton. Aug 82, 28p NBS-SP-260-76
Library of Congress catalog card no. 82-600574.

This Standard Reference Material, SRM 485a, is a renewal of SRM 485, and is intended for the calibration of x-ray diffraction equipment used in determining the amount of retained austenite in hardened steels. 216 compacts were produced and subsequently examined for nickel content by x-ray fluorescence spectrometry. A calibration curve was established using 13 compacts randomly selected from the population of 216. The curve relates the weight percent nickel from x-ray fluorescence measurements to the volume percentage austenite as determined by quantitative microscopy measurements of area percent. The curve was then used to assign the certified values to the remaining compacts. This SRM may be used as an x-ray diffraction standard for retained austenite or in very special cases as an x-ray fluorescence standard for nickel content.

PB83-115576 PC **A03**/MF **A01**
National Bureau of Standards, Washington, DC. National Measurement Lab.
Standard Reference Materials: A Standard Reference Material Containing Nominally Thirty Percent Austenite (SRM 487).
Special pub. (Final),
G. E. Hicho, and E. E. Eaton. Sep 82, 28p NBS-SP-260-78
Library of Congress catalog card no. 82-600587.

This Standard Reference Material, SRM 487, is intended for the calibration of x-ray diffraction equipment used in determining the amount of retained austenite in hardened steels. 233 compacts were produced and subsequently examined for nickel content by x-ray fluorescence spectrometry. A calibration curve was established using 19 compacts randomly selected from the population of 233. The curve relates the weight percent nickel from x-ray fluorescence measurements to the volume percentage austenite as determined by quantitative microscopy measurements of area percent. The curve was then used to assign the certified values to the remaining compacts. This SRM may be used as an x-ray diffraction standard for retained austenite or in very special cases as an x-ray fluorescence standard for nickel content.

PB83-116640 PC **A07**/MF **A01**
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Engineering Science and Mechanics.
Development of a Priest Interferometer for Measurement of the Thermal Expansion of Graphite-Epoxy in the Temperature Range 116-366K,
)John S. Short, Michael W. Hyer, David E. Bowles, Daniel Post, and Stephen S. Tompkins. Sep 82, 137p VPI-E-82-18
Sponsored in part by National Aeronautics and Space Administration, Langley Station, VA. Langley Research Center.

The thermal expansion behavior of graphite epoxy laminates between 116 and 366 degrees Kelvin was investigated using a novel implementation of the Priest interferometer concept. This report describes the design, construction and use of the interferometer along with the experimental results it was used to generate. The experimental program consisted of 25 tests on 25.4 mm and 6.35 mm wide, 8-ply pi/4 quasi-isotropic T300-5208 graphite/epoxy specimens and 3 tests on a 25.4 mm wide unidirectional specimen. Experimental results are presented for all tests along with a discussion of the interferometer's limitations and some possible improvements in its design.

PB83-116848 PC **A04**/MF **A01**
Bionetics Corp., Hampton, VA.

Development of a Charged Grid Sensor for Airborne Carbon Fibers.
Final rept. 1 Jul 80-30 Sep 81,
S. Salmirs, J. Schrader, and A. Butterfield. Oct 82, 54p EPA-600/3-82-086
Contract EPA-68-02-3272

This development addressed the sensing and measurement of carbon fibers moving in ventilating ducts or the exhaust stacks of incinerators. The sensor system utilizes a series of 5 electrically charged grids with different grid spacings to sense the fibers, make determinations of their length, and present a count of the numbers detected. The system will sense carbon fibers shorter than 0.1 mm moving at velocities from 2 to 4 meters per second. In addition, the system will measure fiber populations up to 100 fibers/cu meter in each of 5 lengths ranging from 0.1 to 1.5 mm. The areas which require further development have been identified together with a list of design requirements and alternate materials or fabrication techniques applicable to producing a unit for evaluation in a field test. A companion development produced a mobile flow test facility for evaluating and calibrating instrumentation which measures fibrous aerosols.

PB83-117325 PC **A07**/MF **A01**
National Bureau of Standards, Washington, DC. National Measurement Lab.
Standard Reference Materials: Application of Some Metal SRM's as Thermometric Fixed Points.
Special pub. (Final),
George T. Furukawa, John L. Riddle, William R. Bigge, and Earl R. Pfeiffer. Aug 82, 144p NBS-SP-260-77
Library of Congress catalog card no. 82-600578.

Equipment and procedures are described for the realization of liquid-solid phase equilibrium states of some pure metals as thermometric fixed points for platinum resistance thermometry. The design and techniques for assembling fixed-point cells using Standard Reference Materials (SRM) 740 (zinc), 43h (zinc), 42g (tin), 741 (tin), 44f (aluminum), 746 (cadmium), and 743 (mercury) are given and the results of the measurements using the purer of these metal SRM's are analyzed and evaluated. The reproducibility of temperature measurements with these metal SRM's is shown to be about plus or minus 0.1 mK.

PB83-800979 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Infrared Techniques for Nondestructive Testing. 1964-October 1982 (Citations from the NTIS Data Base).
Nov 82, 142p
Supersedes PB81-808420 and PB80-810542.

Fundamental principles of nondestructive testing and inspection, by use of infrared devices, are investigated in these Federally-funded research reports. Tire flaws, electronic circuit defects, and flaws inbonded surfaces are among the applications researched. (This updated bibliography contains 135 citations, 11 of which are new entries to the previous edition.)

PB83-853135 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Profilometers. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 86p
Supersedes PB81-851719.

This bibliography contains citations concerning profilometer design, performance and applications. Fast versatile optical profilometers, airborne profilometer measurements, photometric measurement of terrain roughness, and three dimensional characterization of engineering surfaces are among the topics discussed. (This updated bibliography contains 83 citations, 12 of which are new entries to the previous edition.)

PB83-853994 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Flow Measurement by Laser Beam. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 101p

This bibliography contains citations concerning flow measurement by laser beam techniques. Liquid and gas flow measurement technology and design are discussed. Flow visualization, wind tunnel, turbine flow, and combustion diagnostic techniques are considered. (Contains 80 citations fully indexed and including a title list.)

PB83-854935 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Thermocouple Applications. June, 1974-November, 1982 (Citations from the International Aerospace Abstracts Data Base).
Rept. for Jun 74-Nov 82.
Nov 82, 200p
Supersedes PB81-855140.Prepared in cooperation with the National Aeronautics and Space Administration, Washington, DC.

This bibliography contains citations concerning the design and application of thermocouples primarily in the aerospace industries. Design innovations, research studies, performance evaluations and applications to such areas as jet engine design, aerospace calibration tests, heat pumps, and gas turbines are discussed. Other heat sensing applications not related to aerospace technology are also included. (This updated bibliography contains 206 citations, 164 of which are new entries to the previous edition.)

PB83-855197 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Measurement Technology and Standards: Electric Current, Voltage, and Capacitance. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 238p

This bibliography contains citations concerning technology and standards of electric current, voltage, and capacitance measurements. Measuring devices and procedures, automatic measuring systems, and characteristics and calibration of measurement standards are discussed. Technology applications and measurement error sources and correction techniques are presented. (Contains 239 citations fully indexed and including a title list.)

14E. Reprography

PB83-112573 PC **A04**/MF **A01**
Horray K.G., Furtwangen (Germany, F.R.).
Microprocessor-Controlled Stamping Unit with Needle Printer,
Klaus Ruppert Klein. 1982, 51p BMFT-FB-T-81-189
Trans. of mono. Mikroprozessorgerteuertes Stempelgeraet mit Nadeldrucker, n.p., 50p Nov 81. See also N82-19868.

The report gives an outline of the development of the CS80 Computer Stamp of Messrs. Horray KG. At the beginning of the project a detail duty file was worked out in which all important functions were defined. After having marked out mechanical, boundary conditions (needle-shot frequency and paper speed) a mechanical prototype construction could be made. At the same time, electrc-mechanical construction was started and finished, so that printing trials could be carried out. Both theoretical and practical conclusions led to good printing results.

PB83-116202 PC **A04**/MF **A01**
Optische Werke G. Rodenstock, Munich (Germany, F.R.).
Development of a Process Camera Lens with Variable Focal Length,
H. Grumpelt, P. Hanke, E. Rothe, M. Schuck, and W. Smilga. Oct 82, 70p BMFT-FB-T-81-155
Trans. of mono. Entwicklung eines Reproduktionsobjektives mit veranderbarer Brennweite, n.p., 92p Sep 81. See also N82-15415.

Process cameras of today are equipped exclusively with fixed focal length lenses. The report describes the development of a process lens with variable focal length. It explains the design principles of its optical, mechanical, and electronic groups of components. Within the reproduction range of beta = -5 and with an object, that is, image diagonal of 781 mm, the prototype of the new lens reaches the image quality of fixed focal length lenses.

PB83-855106 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
High Speed Photography. June, 1970-November, 1982 (Citations from the NTIS Data Base).
Rept. for Jun 70-Nov 82.
Nov 82, 332p
Supersedes PB82-856089.

This bibliography contains citations concerning applications of the high speed photography in research and development. Fracture of structural materials under dynamic loads, initiation and wave propagation of explosions in combustible liquids and solids, laser applications, and high velocity impact damage on automobiles and humans in motor vehicle accidents are among the topics discussed relative to research and experimentation using high speed photography. Many patents are included. (This updated bibliography contains 265 citations, 25 of which are new entries to the previous edition.)

16.
MISSILE TECHNOLOGY

16D. Missiles

PATENT-4 340 197 Not available NTIS
Department of the Air Force, Washington, DC.
Decoy Missile.
Patent,
George S. Campbell. Filed 15 Feb 66, patented 20 Jul 82, 4p AD-D009 737/8, PAT-APPL-529 182
Supersedes PAT-APPL-529 182-66.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

The patent describes a decoy missile having a high moment of inertia with a corresponding reduction of the natural oscillation frequency for simulating reentry of a ballistic nose cone into the earth's atmosphere. High density ballast material in the base section such that the distance between the center of pressure and the center of gravity is equal to one-half the base diameter.

17.

NAVIGATION, COMMUNICATIONS, DETECTION, AND COUNTERMEASURES

17B. Communication

N82-33594/4 PC **A06**/MF **A01**
National Aeronautics and Space Administration, Houston, TX. Lyndon B. Johnson Space Center.
Shuttle Sts-2 Mission Communication Systems RF Coverage and Performance Predictions. Volume 1: Ascent.
J. A. Porter, J. S. Gibson, Q. D. Kroll, and Y. C. Loh. 5 Oct 81, 108p NAS 1.15:84853, JSC-17625-V-1, NASA-TM-84853

The RF communications capabilities and nominally expected performance for the ascent phase of the second orbital flight of the shuttle are provided. Predicted performance is given mainly in the form of plots of signal strength versus elapsed mission time for the STDN (downlink) and shuttle orbiter (uplink) receivers for the S-band PM and FM, and UHF systems. Performance of the NAV and landing RF systems is treated for RTLS abort, since in this case the spacecraft will loop around and return to the launch site. NAV and landing RF systems include TACAN, MSBLS, and C-band altimeter. Signal strength plots were produced by a computer program which combines the spacecraft trajectory, antenna patterns, transmit and receive performance characteristics, and system mathematical models. When available, measured spacecraft parameters were used in the predictions; otherwise, specified values were used. Specified ground station parameter values were also used. Thresholds and other criteria on the graphs are explained.

PAT-APPL-6-407 409 PC **A03**/MF **A01**
Department of the Army, Washington, DC.
Orthogonal Code Division Multiple Access Communications System.
Patent Application,
Frank S. Gutleber. Filed 12 Aug 82, 26p AD-D009 734/5
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

This invention relates generally to noise code communications systems and more particularly to an orthogonal code division multiple-access (CDMA) communications system which utilizes noise code mate pairs. An orthogonal code division multiple-access communications system is comprised of a plurality of transceivers respectively employing orthogonal noise code mate pairs of a type having autocorrelation functions upon detection which when linearly added together compress into a lobeless impulse and wherein the same single time slot is utilized by all of the users in the system. Each user is assigned a different unique noise code pair consisting of code mate pairs that are selected from a subset of multiplexed noise codes whose cross-correlation function value is equal to zero at a time when all the code mate pairs compress to an impulse. The described arrangement enables random access, or direct call-up, to be accomplished with no interference between the users while using different noise codes for each user.

PB83-106708 CP **T03**
Federal Communications Commission, Washington, DC. Data Automation Div.
Microwave Application Processing System Owner File.
Data file,
Joe Knippenberg. 1 Oct 82, mag tape FCC/DF-83/003
Supersedes PB81-199531.
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions. Price includes documentation, PB-294 692.

This file is a subsidiary file to the Microwave Application Processing System Data Base. It contains Microwave station owner's names and addresses.

PB83-106716 CP **T11**
Federal Communications Commission, Washington, DC. Data Automation Div.
Microwave Applications Processing Systems Data Base.
Data file,
Joe Knippenberg, and William Bushman. 1 Oct 82, mag tape FCC/DF-83/004
Supersedes PB82-176397.
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions. Price includes documentation, PB-294 692.

This tape contains station and antenna location information, signal path information and technical operating characteristics of Microwave radio stations licensed by the Safety & Special Radio Services Bureau of the FCC.

PB83-106724 CP **T03**
Federal Communications Commission, Washington, DC. Computer Applications Div.
Cable Television Physical (Trunk) Data File.
Data file,
William L. Lannin. 1 Oct 82, 1p FCC/DF-83/002
Supersedes PB81-247710.
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

A data base of technical information about the services provided to the cable communities contains information pertaining to signal carriage and distribution, communities served, and auxiliary cable services performed. This system, by aggregating the Cable communities served by individual technical entities, identifies the complete cable system.

PB83-107573 PC **A07**/MF **A01**
National Telecommunications and Information Administration, Washington, DC.
Integrated Services Digital Networks, Standards, and Related Technology,
D. V. Glen. Jun 82, 142p NTIA/REPORT-82/103

National and international work toward an Integrated Services Digital Network (ISDN) and the progress toward its implementation is described. Standards activity and technology relating to the ISDN, in the United States and abroad, are presented.

PB83-108225 CP **T99**
Federal Communications Commission, Washington, DC. Computer Applications Div.
Master Frequency File Tape (450-512 IB Subset).
Data file,
John Guill, and Patricia Rinn. 23 Aug 82, mag tape FCC/DF-82/027
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This tape is a research resource for all licensee in the 450-512 frequency (Mhz) range Industrial Business service of the Private Radio Bureau Land Mobile area. It contains records of same format as the entire Master Frequency (non-Gov't tapes). Major data elements include service, licensee, licensee mailing address, transmitter state, transmitter city, latitude, longitude, and frequency. Also station class, emission, power and antenna height. The complete list of data elements is given in the documentation.

PB83-109231 PC **A04**/MF **A01**
Helsinki Univ. of Technology, Otaniemi (Finland). Telecommunication Switching Lab.
Service Quality in the International Telephone Network: New Dimensioning Methods for Traffic Routes,
Kauko Rahko. 10 Jun 80, 53p ISBN-951-752-014-X, 5/80
Also pub. in ISSN-0355-7057.

Guest lectures given at the Technical University of Berlin.

PB83-110494 PC**$11.00**
International Telecommunication Union, Geneva (Switzerland). International Telegraph and Telephone Consultative Committee.
CCITT Plenary Assembly (7th). Recommendations Provisionally Adopted: S.71 LAPD Extended for Half-Duplex Physical Level Facility. T.30 Procedures for Document Facsimile Transmission in the General Switched Telephone Network. T.35 Procedure for the Allocation of CCITT Members' Codes.
c1982, 12p ISBN-92-61-01351-1
See also PB82-187519.

This report presents three additions to the telegraph and telematic services series prepared by the VIIth Plenary Assembly of the International Telegraph and Telephone Consultative Committee in Geneva. These additions are (1) S.71, LAPB extended for half-duplex physical level facility; (2) T.30, Amendments to the Recommendation; and (3) T.35, Procedure for the allocation of CCITT members' codes.

PB83-112136 PC **A06**/MF **A01**
Federal Communications Commission, Washington, DC. Office of Plans and Policy.
UHF Reception and Television Preamplifiers
Staff rept.,
Alex D. Felker. Apr 81, 119p

The report examines the mechanisms by which preamplifiers can both improve and degrade television reception, with an emphasis on UHF reception. The analysis includes a comparison of the relative picture quality improvement each of eleven currently marketed preamplifier, two prototype preamplifiers, and a high performance antenna can provide. Finally, the report suggests how quantitative preamplifier performance specifications can be presented to average viewers in a manner that they will find helpful during their purchasing decision making.

PB83-113480 PC **E15**/MF **E15**
Plastics and Rubber Inst., London (England).
Plastics in Telecommunications III, 15, 16 and 17 September 1982.
c1982, 415p ISBN-0-903107-34-1

Efficient telecommunications services are the nerve system of an industrial society. These services could not be provided economically without the extensive use of plastics in cables, exchange equipment and transmission systems. This international conference, organized by the Plastics and Rubber Institute's Meetings Committee, aims to record the state of the art in a rapidly expanding field. The programme will look at the latest advances and materials being used, and in particular the areas where considerable development has and is likely to take place including measurement techniques. Wide participation is expected from overseas which should provide the opportunity for encouraging international co-operation.

PB83-114579 PC **A04**/MF **A01**
Siemens A.G., Munich (Germany, F.R.). Unternehmensbereich Bauelemente.
Integrated Filter for Video Color Processing,
Horst Grobecker, Wolfgang Haussmann, Heinz-Peter Heller, and Rainer Lueder. Oct 82, 66p BMFT-FB-T-81-085
Trans. of mono. Intergrierbare Filter fuer den Farbsignalteil, n.p., 85p May 81.

Besides some analog integrated circuits, the PAL-color decoder of a color TV set consists of various filters. Some of them can be integrated with modern semiconductor technologies. The advantages are a re-

duction in costs and adjustment and an increased reliability and performance. A concept was developed which uses CCD filters for the PAL-comb-filter, the luminance- delay-line and the color trap. These filters were fabricated and their performance was proved by measurement and by simulation with video signals. A PAL-video-IC, which includes the demodulation, amplifying, matrix and controlling was designed. It is matched to the CCD-filters.

PB83-118950 CP **T03**
Federal Communications Commission, Washington, DC. Computer Applications Div.
Antenna Survey Tower File.
Data file,
Susan L. Gustafson. Oct 82, mag tape FCC/DF-83/015
Supersedes PB-272 252.
Source tape is in EBCDIC character set. Tapes can be prepared in most standard 7 or 9 track recording modes for one-half inch tape. Identify recording mode desired by specifying character set, track, density, and parity. Call NTIS Computer Products if you have questions.

This file contains Tower data on all Towers requiring FAA or FCC clearance.

PB83-854992 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Phase Shift Keying. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 237p

This bibliography contains citations concerning the design and performance of the development and use of phase shift keying modulators and demodulators. Phase shift keying (PSK) applications include satellite links and mobile communications under low or fading signal conditions. Most of the citations refer to digital data to make effective use of the frequency spectrum, although a few citations reference voice modulation as in satellite radio broadcasts and in aeronautical or marine applications. Several citations reference synchronization techniques. (Contains 229 citations fully indexed and including a title list.)

PB83-855007 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Phase Shift Keying. 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for 1970-Nov 82.
Nov 82, 112p

This bibliography contains citations concerning the design, and performance of the development and use of phase shift keying modulators and demodulators. Phase shift keying (PSK) applications include satellite links and mobile communications under low or fading signal conditions. Most of the citations refer to digital data to make effective use of the frequency spectrum, although a few citations reference voice modulation as in satellite radio broadcasts and in aeronautical or marine applications. Several citations reference synchronization techniques. (Contains 113 citations fully indexed and including a title list.)

17D. Electromagnetic and Acoustic Countermeasures

PATENT-4 342 119 Not available NTIS
Department of the Air Force, Washington, DC.
Multi-Tone Jammer.
Patent,
Loren R. Seidl. Filed 27 Aug 80, patented 27 Jul 82, 4p AD-D009 741/0, PAT-APPL-6-181 940
Supersedes PAT-APPL-6-181 940, AD-D007 855.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A waveform capable of jamming some or all of the channels of a multiple channel receiver is developed by a multi-tone jammer that uses a digital counter and a digital/analog converter to generate a ramp voltage for a voltage controlled oscillator (VCO). The output of the VCO is modulated by a pin diode attenuator. The attenuator is controlled by a pattern generator synchronized with the digital counter to blank the retrace and any portion of the sweep to provide a partial band tone jamming spectrum. The digital counter is driven by a MHz reference signal generator and the sweep repetition rate is greater than the circuit bandwidth. (Author)

17F. Magnetic Detection

PAT-APPL-6-398 499 PC **A03**/MF **A01**
Department of the Navy, Washington, DC.
Two Headed Magnetic Proximity Sensor.
Patent Application,
Frank W. Heemstra. Filed 15 Jul 82, 33p AD-D009 745/1
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

The present invention relates generally to magnetic proximity detectors, and more particularly to magnetic proximity switches utilizing a dc magnetic flux as the physical property to be detected. The magnetic proximity sensor detects the proximity of a laterally moving magnetized target moving along a translation axis which is parallel to a line joining the targets magnetic poles, including: two ring-core flux-gate magnetometers disposed adjacent to each other with their axes of sensitivity in parallel, with both axes perpendicular to the magnetized target translation axis. The energizing coils of the flux-gate magnetometers are driven by an ac signal at frequency f sub o. The signal on the detecting coils in each flux-gate magnetometer is applied to a phase comparator via a bandpass filter tuned to the second harmonic of f sub o. When the signals applied to the phase comparator are of opposite phase, then the center plane equidistant from the target's magnetic poles is between the two axes of sensitivity of the magnetometers.

17I. Radar Detection

N82-33596/9 PC **A06**/MF **A01**
Missouri Univ.-Columbia.
Active Microwave Remote Sensing Research Program Plan. Recommendations of the Earth Resources Synthetic Aperture Radar Task Force.
Jun 80, 116p NAS 1.26:167726, NASA-CR-167726
Contract NAS9-15896

A research program plan developed by the Office of Space and Terrestrial Applications to provide guidelines for a concentrated effort to improve the understanding of the measurement capabilities of active microwave imaging sensors, and to define the role of such sensors in future Earth observations programs is outlined. The focus of the planned activities is on renewable and non-renewable resources. Five general application areas are addressed: (1) vegetation canopies, (2) surface water, (3) surface morphology, (4) rocks and soils, and (5) man-made structures. Research tasks are described which, when accomplished, will clearly establish the measurement capabilities in each area, and provide the theoretical and empirical results needed to specify and justify satellite systems using imaging radar sensors for global observations.

N82-33796/5 PC **A10**/MF **A01**
Bionetics Corp., Hampton, VA.
Norsex 1979 Microwave Remote Sensing Data Report.
Summary Report, 29 Sep. - 12 Oct. 1979.
H. F. Hennigar, and S. K. Schaffner. May 82, 223p
NAS 1.26:165967, NASA-CR-165967
Contract NAS1-16978

Airborne microwave remote sensing measurements obtained by NASA Langley Research Center in support of the 1979 Norwegian Remote Sensing Experiment (NORSEX) are summarized. The objectives of NORSEX were to investigate the capabilities of an active/passive microwave system to measure ice concentration and type in the vicinity of the marginal ice zone near Svalbard, Norway and to apply microwave techniques to the investigation of a thermal oceanic front near Bear Island, Norway. The instruments used during NORSEX include the stepped frequency microwave radiometer, airborne microwave scatterometer, precision radiation thermometer and metric aerial photography. The data are inventoried, summarized, and presented in a user-friendly format. Data summaries are presented as time-history plots which indicate when and where data were obtained as well as the sensor configuration. All data are available on nine-track computer tapes in card-image format upon request to the NASA Langley Technical Library.

PATENT-4 321 871 Not available NTIS
Department of the Navy, Washington, DC.
Target Detecting Device.
Patent,
Erwin I. Abadie, John O. Dick, and Howard M. Forrester. Filed 24 Apr 68, patented 30 Mar 82, 5p AD-D009 725/3, PAT-APPL-725 262
Supersedes PAT-APPL-725 262-68.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A passive target detecting system for discriminating against both doppler and continuous wave off-target radars. A signal from the missile guidance system representing the pulse repetition frequency of the target being tracked is combined in a coincidence circuit with the signals received by the target detecting device. Doppler signals are compared directly while CW signals are processed through a chopper amplifier circuit to simulate doppler signals before comparison. (Author)

PATENT-4 338 603 Not available NTIS
Department of the Navy, Washington, DC.
Self Adaptive Correlation Radar.
Patent,
William R. Magorian. Filed 25 May 67, patented 6 Jul 82, 4p AD-D009 731/1, PAT-APPL-643 297
Supersedes PAT-APPL-643 297-67.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

A coherent radar system for using the effects of doppler shift on the distributed spectrum of a pulse modulated carrier to produce a harmonic relationship between doppler side bands at the frequency of the transmitted pulse repetition frequency. Correlation between adjacent side bands are used to generate a second order doppler signal which has a wavelength equal to the pulse repetition frequency instead of the carrier frequency. (Author)

18.

NUCLEAR SCIENCE AND TECHNOLOGY

18A. Fusion Devices (Thermonuclear)

DE82002065 PC **A02**/MF **A01**
Lawrence Livermore National Lab., CA.

Group 18A—Fusion Devices (Thermonuclear)

TMX-Upgrade Vacuum-System Design and Analysis.
T. C. Simonsn, A. K. Chargin, R. P. Drake, W. E. Nexsen, and W. L. Pickles. Oct 81, 5p UCRL-85981, CONF-811040-33
Contract W-7405-ENG-48
Symposium on engineering problems of fusion research, Chicago, IL, USA, 26 Oct 1981.

This paper describes the design and analysis of the TMX Upgrade Vacuum System. TMX Upgrade is a modification of the TMX tandem mirror device. It will employ thermal barriers to further improve plasma confinement. Thermal barriers are produced by microwave heating and neutral-beam pumping. They increase the feasibility of tandem-mirror reactors by reducing both the required magnetic field strengths and the neutral-beam injection voltages. (ERA citation 07:017079)

DE82012218 MF **A01**
Lawrence Livermore National Lab., CA.
Magnetic-Fusion Energy and Computers.
J. Killeen. 1982, 4p UCRL-87454, CONF-820810-4
Contract W-7405-ENG-48
10. international mathematics and computers simulation congress on systems simulation and scientific computation, Montreal, Canada, 9 Aug 1982, Portions of document are illegible.
Available in microfiche only.

The application of computers to magnetic fusion energy research is essential. In the last several years the use of computers in the numerical modeling of fusion systems has increased substantially. There are several categories of computer models used to study the physics of magnetically confined plasmas. A comparable number of types of models for engineering studies are also in use. To meet the needs of the fusion program, the National Magnetic Fusion Energy Computer Center has been established at the Lawrence Livermore National Laboratory. A large central computing facility is linked to smaller computer centers at each of the major MFE laboratories by a communication network. In addition tc providing cost effective computing services, the NMFECC environment stimulates collaboration and the sharing of computer codes among the various fusion research groups. (ERA citation 07:055893)

N82-34234/6 PC **A08**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Desorption and Related Phenomena Relevant to Fusion Devices.
A. Koma. Apr 82, 166p IPPJ-AM-22

Desorption and related phenomena involved in the plasma wall interactions in fusion devices are briefly reviewed. Ion induced desorption, electron stimulated desorption, photodesorption, ion induced reemission of H, D and He atoms, chemisorption on carbide surfaces, and theory of desorption are discussed.

N82-34238/7 PC **A02**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Formation of Magnetic Islands and Ergodic Magnetic Layers in Wall-Lapping Plasma as a Non-Divertor Concept for a Reactor-Relevant Tokamak.
T. Kawamura, Y. Abe, and T. Tazima. May 82, 21p IPPJ-587

The formation of resonant islands and the ergodization of magnetic field lines in the Tokamak boundary due to the subsidiary helical coils are numerically analyzed for the wall-lapping plasma concept as a nondivertor scenario for a reactor-relevant Tokamak. The parameters are taken referring to the R-Tokamak, a reacting plasma project. It was verified that this concept could be realized using the rotating islands by three sets of helical coils carrying alternating currents with shifted phases. It is also shown that this is possible by the local helical coils which span limited toroidal regions of the torus.

N82-34239/5 PC **A02**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Probe Measurements for Impurity Transport in the Scrape-off Layer of Jipp T-II.
M. Mohri, T. Satake, H. Hashiba, T. Yamashina, and S. Amemiya. May 82, 23p IPPJ-590

Impurity transport processes in the scrape-off layer of the JIPP T- 2 device were studied by a probe method. A cubical silicon probe was inserted and exposed to 20 identical Tokamak discharges in the scrape-off region. Deposited impurities were analyzed with use of AES, RBS and PIXE equipment. The main metallic impurities were molybdenum and iron whose deposition behavior was almost the same on any side of the probe, and their fluxes were observed to be 1.2 x 10 to the 13th power/sq cm discharge on the electron drift side and 5.2 x 10 to the 13th power/sq cm discharge on the ion drift side, respectively at the distance of 18.3 cm from the center line of the plasma. The mean transport energy of the impurities striking the probe surface was estimated from the depth concentration profile applying the LSS theory for iron as 90 eV on the electron drift side and 250 eV on the ion drift side, respectively. The e-folding length of the scrape-off plasma density was measured by the radial distribution of a deposited tantalum amount to be 0.64 cm on the electron drift side and 1.73 cm on the ion drift side, respectively.

N82-34241/1 PC **A02**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
All Coated Limited Experiment in the Jipp T-II Tokamak.
Y. Gomay, K. Kawahata, N. Noda, and S. Tanahashi. Jun 82, 19p IPPJ-593

All the aperture limiters in JIPP T-II were changed to be TiC coated graphite. The maximum density in this condition is 7.6 x 10 to the 13th power/cu cm with the safety factor of 4.5, which is 2.7 times as high as the value obtained by the Murakami scaling. The Z(eff) values with this density and with a medium density of 2.4 x 10 to the 13th power/cu cm density are both close to unity after discharge cleaning for only three days. The behavior of limiter material release was found to be steady within a factor of two during the discharge, suggesting that the release mechanism is ion sputtering. Residual gas analysis also suggested that this sputtering is not chemical, which may be partly because the limiter surface temperature during the discharge is below 150 C.

N82-34242/9 PC **A02**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Wall Material Characteristics in Reacting Plasma Modelling.
T. Kawamura, K. Akaishi, and A. Miyahara. Jun 82, 17p IPPJ-592

Using the one dimensional diffusion equation for impurities and energy balance equation for ions and electrons in the steady state Tokamak plasma, the self-consistent solutions of the impurity density profile and the temperature profile for a reacting DT plasma are analyzed, by taking into account of the plasma-surface interaction. On the bais of these results the influences of the impurities originated from the wall on the central plasma conditions and the Q-value of a reacting plasma are discussed.

N82-34243/7 PC **A02**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Helical Magnetic Configurations Produced with the Help of Ferromagnetic Materials. 2: The Helimag.
K. Ikuta. May 82, 18p IPPJ-591

A method of generating a helical magnetic configuration using a helical electro-magneto is established. It is suggested that this method might open the way for constructing large stellarators using circular planar coils and an electro-magneto for helical field. Since the rotational transform generated by this method is free from the deformation factor of the shaped ferromagnetic wall, the rotational transform is controllable by changing currents in the magnetization coils of a helical electro-magneto, although this control was impossible in the case of the ferromak. The application of this method to the modular stellarators is also discussed.

N82-34246/0 PC **A02**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Wall Conditioning of the Jipp T-II Torus by AC Discharge Cleaning.
N. Noda, S. Tanahashi, K. Kawahata, Y. Kawasumi, and S. Ishji. Jun 82, 15p IPPJ-595
Submitted for Publication. Presented at the 5TH Intern. Conf. On Plasma Surface Interactions, Gatlinburg, Tenn., May L982.

Optimization of discharge cleaning was studied by using 60 Hz ac and cw ECR discharges. Reduction rate of oxygen was investigated for variations of the wall temperature. it is confirmed that, below 300 C, the reduction rate increases as the wall temperature is raised. A simple model is proposed for cleaning process and H2O pressure is calculated as a function of plasma density on the basis of this model. By comparing the calculated results to an experimental observation, it is found that it is essential to raise the electron density of the discharge-cleaning plasma high enough that the dissociation-loss rate of H2O is as large as the sticking-loss rate in order to optimize the cleaning.

N82-34249/4 PC **A03**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Transport Code Study of Electron Cyclotron Heating in Tokamaks.
T. Shimozuma, S. Tanaka, T. Maekawa, M. Okamoto, and T. Amano. May 82, 39p IPPJ-582

In order to realistically simulate the electron cyclotron heating (ECH) in Tokamak plasmas, a one dimensional Tokamak transport code is combined with the electron cyclotron wave ray tracing code. The absorbed wave energy by plasma due to cyclotron damping of the electromagnetic waves (both ordinary (O) and extraordinary (X) modes) is taken into account as the energy source of the electron energy balance equation and several rays having different incident positions and angles are calculated to model the finite width and divergence of the microwave beam. The calculation for the ECH experiment on ISX-B Tokamak is carried out by using the present code and a fairly good agreement is obtained between the two. The code is also applied to the experimental parameters for ECH on WT-2 Tokamak and some characteristics of ECH are examined.

N82-34254/4 PC **A02**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
A Scaling Law of Neutron Yield for DT Discharge in Plasma Focus.
T. Kobata, I. Ueno, M. Tanimoto, and K. Ikuta. Jul 82, 11p IPPJ-600

A scaling law of neutron yield for a D-T gas discharge in a plasma focus device is obtained. The resulting scaling law supports the feasibility of the D-T fusion reactor by the use of plasma focus, provided that the device is operated under a high voltage condition.

N82-34255/1 PC **A02**/MF **A01**
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Formation of Z-Discharged Plasma Channel in Lib-Fusion Device.
S. Kawata, K. Niu, and H. Murakami. Jul 82, 17p IPPJ-601

The process of the formation of the plasma channel by z-discharge to transport the intense ion beam is made clear by computer simulation. A z-discharged current achieves 50 kA, which is strong enough to confine the beam in the channel. Two kinds of radial motion are induced in the channel; one is the inward pinch motion by the self-magnetic field and the other is the outward expanding motion accompanied by the shock wave.

18C. Nuclear Explosions

DE82012239 PC **A07**/MF **A01**
Fenix and Scisson, Inc., Mercury, NV.
Geologic, Geophysical, and In-Situ Stress Investigations in the Vicinity of the Dining Car Chimney, Dining Car/Hybla Gold Drifts, Nevada Test Site.
D. R. Townsend, M. J. Baldwin, R. D. Carroll, W. L. Ellis, and J. E. Magner. 1982, 148p USGS-OFR-82-137
Contract AI08-76DP00474
Portions of document are illegible.

The Hybla Gold event, detonated on Nov. 1, 1977, was conducted in the U12e.20 drifts of the E-tunnel complex beneath the surface of Rainier Mesa at the Nevada Test Site. Though the proximity of the Hybla Gold working point to the chimney of the Dining Car event was important to the experiment, the observable geologic effects from Dining Car on the Hybla Gold site were minor. Overburden above the working point is approximately 385 m (1263 ft). The pre-Tertiary surface, probably quartzite, lies approximately 254 m (833 ft) below the working point. This report comprises three chapters detailing the geologic, geophysical, and in situ stress data gathered in the period January through

June 1977, in the course of mining and drilling in the Hybla Gold/Dining Car region. These investigations confirm several observations reported previously for the Rainier event, i.e., a zone of microfailure observable in thin-section and in physical properties exists adjacent to the chimney. In addition, however, a number of investigations add new information to our understanding of effects near the detonation point. Shear waves were found to be highly diagnostic in the microcracked zone near the chimney as well as zones of failure at greater range not discernible as well as zones of failure at greater range not discernible by other techniques. Extensive in situ stress measurements made by the hydrofracture and overcore techniques indicate changes in the orientation and magnitude of the pre-Dining Car stress field. The hydrofracture technique further suggests pronounced gradients in minimum stress magnitudes over short distances at some locations in the postshot stress regime. (ERA citation 07:058049)

18D. Nuclear Instrumentation

DE82005466 PC **A11**/MF **A01**
New York Univ. Medical Center, NY.
In Vivo-Detection, Localization and Measurement of Radionuclides in Man: A Detection System for the Localization Amd Measurement of Small Amounts of Photon Emitters. Progress Report, March 1, 1981-October 31, 1981.
G. R. Laurer. 1 Nov 81, 226p DOE/EV/04957-T1, COO-4957-3
Contract AS02-78EV04957

The design, construction, and testing of a photon detection system which will yield, simultaneously, information proportional to both the magnitude and location of sources of radioactivity are under investigation. The operating principle of the detector system, active collimation, allows spatial resolution by utilizing the crystal elements themselves as the collimating device; hence a greater counting efficiency is attainable. Two approaches have been tested thus far: in the first, the differences in characteristics of various crystals are utilized as the means of separating events occurring in each of five crystals viewed by a single phototube; in the second, smaller, single crystal/phototube elements are used in the array. Mathematical processing of the counts from the individual crystal elements is then employed in conjunction with their geometric relationship to develop both positional data and to quantify the amount of radioactivity. By utilizing crystal elements in an active collimation configuration and incorporating them in an array which permits these crystals to be alternately advanced and retracted in a programmed, ordered manner, a high degree of spatial resolution is achievable without compromising system sensitivity. The experiments include development of the optimal crystal configuration and the evolving of data processing techniques to translate detector response into precise source position information for localization or imaging purposes. Such a system could add another dimension in studies involving uptake, distribution, and retention of radionuclide labeled compounds because of its ability to actively track, in vivo, the distribution of these compounds. In addition, it should be possible to study, dynamically, the motion of organs, such as the heart or lungs, through which these compounds move. (ERA citation 07:054874)

18E. Nuclear Power Plants

DE82007919 PC **A07**/MF **A01**
Offshore Power Systems, Jacksonville, FL.
Conceptual Design Study: Standard Floating Nuclear Power Plant on Inshore Site and Modified Floating Nuclear Power Plant on Upriver Site.
Feb 82, 147p ALO-1000-Vol.2
Contract AC04-76DP00789
Portions of document are illegible.
Microfiche only after original copies are exhausted.

This volume is comprised of engineering drawings. (ERA citation 07:046849)

18F. Radiation Shielding and Protection

DE82004761 PC **A02**/MF **A01**
Sandia National Labs., Albuquerque, NM.
Perceived Safety of Transporting Hazardous Materials.
R. T. Reese, and E. W. Shepherd. 1981, 14p SAND-81-1348C, CONF-811074-4
Contract AC04-76DP00789
34. Mechanical Failures Prevention Group symposium on designing for damage prevention in the transportation environment, Gaithersburg, MD, USA, 21 Oct 1981.

A framework for relating the variables involved in the public perception of hazardous materials transportation was presented. The framework consisted of a conditional mathematical equation in which perceived safety was described by six basic terms (technical feasibility, political palatability, social responsibility, utility assessment, media interpretation, and familiarity as a function of time). The resulting framework provides the technologist with an initial formulation to better understand public perception. (ERA citation 07:045891)

DE82007066 PC **A02**/MF **A01**
Battelle Pacific Northwest Labs., Richland, WA.
Pressurized Powder Release Through Micro-Openings in Faulted Containers.
J. Mishima, P. C. Owzarski, S. L. Sutter, and L. C. Schwendiman. Jul 80, 6p PNL-SA-8510, CONF-801115-44
Contract AC06-76RL01830
International symposium on packaging and transporting radioactive material, Berlin, F.R. Germany, 10 Nov 1980, Portions of document are illegible.

Estimates of the quantity of a powder potentially released from a faulted shipping container can be highly conservative under the practices currently in use. The integrity of accident-resistant shipping containers is often determined by measuring the leak rate of a gas that can be measured with great sensitivity (such as helium) after a series of rigorous tests. The gas is assumed to contain some mass concentration of powder and the quantity released to the air is the volume released times the mass per volume. A method of more accurately estimating releases of powder through micro-openings has been developed. Under the sponsorship of the Systems Performance Branch of the US Nuclear Regulatory Commission, the Pacific Northwest Laboratory conducted a series of experiments to determine the transmission of a stable powder, such as plutonium dioxide, through micropathways. Dimensions of these pathways were consistent with theoretical openings and measured leak rates determined while testing the inner container of the Plutonium Air Transportable (PAT) package (NRC 1978). The driving force required to obtain a positive leak outward is supplied by heat (radioactive decay and potential fires). In a real situation, the number, size, and shape of the pathways and their orientation with respect to the powder contained (above or below) can vary greatly. To make the problem more tractable, the study was limited to a single, round opening (orifice or capillary). The assumption is still conservative since it results in the largest cross-sectional area for any given gas flow. The study was divided into three phases: the prediction of gas flows through micro-orifices and -capillaries; the transmissions of powder through these pathways; and a methodology to apply the finding to assess the potential airborne release of contained powders from faulted containers. (ERA citation 07:044355)

18G. Radioactive Wastes and Fission Products

DE82008948 PC **A02**/MF **A01**
Atomics International Div., Golden, CO. Rocky Flats Plant.
Removal of Radioactive Materials from Waste Solutions Via Magnetic Ferrites.
T. E. Boyd, R. L. Kochen, and M. Y. Price. 1982, 10p RFP-3242, CONF-820424-25
Contract AC04-76DP03533
ANS topical meeting on treatment and handling of radioactive wastes, Richland, WA, USA, 19 Apr 1982.

Ferrite waste treatment was found to be effective in removing actinides from simulated Rocky Flats process waste solutions. With a one-stage ferrite treatment, plutonium concentrations were consistently reduced from 10 exp -4 g/l to less than 10 exp -8 g/l, and americium concentrations were lowered from 10 exp -7 g/l to below 10 exp -10 g/l. In addition, siginficantly less solid was produced as compared with the flocculant precipitation technique now employed at Rocky Flats. Aging of ferrite solids and elevated beryllium and phosphate concentrations were identified as interferences in the ferrite treatment of process waste, but neither appeared serious enough to prevent implementation in plant operations. (ERA citation 07:045986)

18H. Radioactivity

DE82006089 MF **A01**
Battelle Pacific Northwest Labs., Richland, WA.
Characterizing Radionuclide Movement Through Sediments: Parameter Estimations.
T. L. Jones, S. J. Phillips, and G. W. Gee. Aug 80, 32p PNL-SA-8819, CONF-8008144-1
Contract AC06-76RL01830
International Atomic Energy Agency meeting, Gothenburg, Sweden, 22 Aug 1980, Portions of document are illegible.
Best available copy from document source. Available in microfiche only.

Information is presented regarding the estimation of hydraulic conductivity in soils and the distribution coefficient of radionuclides. (ERA citation 07:044697)

DE82007678 PC **A03**/MF **A01**
Atomics International Div., Golden, CO. Rocky Flats Plant.
Environmental Sciences Semiannual Progress Report, July-December 1980.
J. D. Hurley, and D. C. Hunt. 28 Dec 81, 26p RFP-3287
Contract AC04-76DP03533
Microfiche only after original copies are exhausted.

Four major areas of research effort are reported: dust transport, distribution of transuranics in sediments, evaluation of critical ecological pathways for radionuclides, and terrestrial ecosystem compartmentalization of transuranics. Progress also is described in programs dealing with Rocky Flats Plant land management, a differential alpha emitter analysis project, quality control procedures, the effects of chlorine addition on biological oxygen measurements, and evaluation of Plant-related incident response involving wounded wildlife. In the dust transport project, data continued to be collected on transuranic airborne concentrations and surface-soil activity levels for a field known to have above-back-ground levels of transuranics. The data show principal airborne activity resides on nonrespirable (> 3- mu m aerodynamic diameter) particles. Progress in the sediment sampling program included fitting and modification of the sampling platform; taking of preliminary cores, dredges, and pond-side samples from Lindsay Pond (a near background water body); and acquisition of required sample preparation and storage facilities. The critical pathways project continued, and data were obtained on transuranic levels in garden vegetables grown in soil (with excess transuranic levels) within and outside a greenhouse. Progress in studies of terrestrial ecological distributions of transuranics included collection for radionuclide analysis of approximately 70 rodents on two study plots east of the Plant's security fence. (ERA citation 07:044673)

DE82009118 MF **A01**
Massachusetts Inst. of Tech., Cambridge. Dept. of Earth and Planetary Sciences.
Microcracks and Energy. Progress Report, 1 March 1981-28 February 1982.
G. Simmons. 1 Mar 82, 35p DOE/ER/04972-T1
Contract AC02-78ER04972
Best available copy from document source. Available in microfiche only.

Investigation of the microcracks in granites from Redstone Quarry (NH) (Mt. Osceola and Conway granites), Granite Hills (WY), and the Sherman Mountain area (WY) shows the following: Microcracks are abundant; most microcracks are sealed; Ca+REE and

Fe+(Ca+Mn) carbonates with associated U are very common crack sealing minerals; amphiboles near sealed cracks in the Mt. Osceola granite are extensively altered and contain approximately 50% of the uranium; and many sealed microcracks in all three granites contain uranium. Uranium bearing microcracks are pervasive throughout the 300 foot Redstone Quarry core and in the core samples of the Sherman granite. The conclusion is that extensive mobilization and migration of U and REEs (Sherman granite) have occurred. Two temporally distinct events of U mobilization and migration occurred in the Redstone Quarry granites; they appear to have been extensive and may have extended throughout the entire pluton. The mobility of REEs in the Sherman granite raises potentially serious questions about the standard interpretation of REE patterns for granites in general. Heat production for approximately 60 locations in New England with gamma ray spectrometry have been measured. These data, when combined with data on heat flow obtained in another project, made it possible to constrain the distribution of heat producing elements in central New England. The crust,. (ERA citation 07:044684)

DE82901463 PC **A05**/MF **A01**
Science Applications, Inc., Rockville, MD.
Iodine-131 Behavior During the TMI-2 Accident. Final Report.
C. A. Pelletier, C. D. Thomas, Jr., R. L. Ritzman, and F. Tooper. Sep 81, 81p EPRI-NSAC-30

Iodine is one of the elements that are closely watched relative to any release of radioactivity from a nuclear power plant because in an accident it might account for 25% of total health effects, and contribute 40% more toward health effects than any other single isotope. The question is whether iodine is released to the environment in proportion to its availability in the core. Data from the accident at TMI-2 shows that contrary to expectations, licensing codes, and design basis, only very small amounts of iodine escaped to the environment from the reactor containment and auxiliary buildings. The major portion of the iodine apparently has been dissolved and retained in water in the various systems and in the water that is free in the containment. (ERA citation 07:014537)

PB83-125286 PC **A04**/MF **A01**
Clemson Univ., SC. Water Resources Research Inst.
(226)Ra, (226)Ra and (222)Rn in South Carolina Ground Water: Measurement Techniques and Isotope Relationships,
Jacqueline Michel, Philip T. King, and Willard S. Moore. Jan 82, 65p WRRI-95, W83-00625, OWRT-B-127-SC(2)
Contract DI-14-34-0001-9158
Prepared by South Carolina Univ., Columbia. Dept. of Geology.

A new technique using gamma-ray spectroscopy was developed for the accurate measurement of radium (Ra) isotopes in natural water, and applied to the determination of Ra-228 and Ra-226 activities in over 160 public water supplies from wells in igneous and metasedimentary rocks in the South Carolina Piedmont province and in Coastal Plain sediments. It was found that the migration distances of Radon-222, Ra-226, and Ra-228 by groundwater were similar, and that temporal variations of the isotopes were negligible. Further, the groundwater isotope data for the Coastal Plain province closely paralleled the NURE Augusta 1-degree by 2-degree stream sediment data. Analysis showed the Upper Coastal Plain to have high radioelement levels. Groundwater Ra content could be used as a U exploration tool.

18I. Reactor Engineering and Operation

DE82005385 PC **A03**/MF **A01**
Rockwell International, Canoga Park, CA.
Cover-Gas Seals. FFTF-LMFBR Seal-Test Program. Progress Report, April-June 1976.
O. P. Steele, III, P. Horton, and T. Shimazaki. 1976, 27p DOE/SF/71011-T7
Contract AT03-76SF71011
Portions of document are illegible.

Current activities include providing CRBRP design information based on tests of the IVHM Inflatable Seal to CRBRP conditions, testing the CRBRP dip seal configuration to determine its performance characteristics, and delineating the effects of sodium and radiation environments on the efficiencies of various seal materials. The primary direction of the general seal effort is to develop advanced seal geometries and materials to overcome deficiencies of commercially available seals, permeation rate, compression set, and high temperature operation, which restrict their use in LMFBR applications. (ERA citation 07:046739)

DE82006297 PC **A02**/MF **A01**
Sandia National Labs., Albuquerque, NM.
D7 Debris Bed Experiment - Heat Removal from a Shallow, Stratified UO sub 2 -Sodium Particle Bed.
G. W. Mitchell. 1982, 7p SAND-82-0062C, CONF-820704-2
Contract AC04-76DP00789
International topical meeting on LMFBR safety, Lyon, France, 18 Jul 1982, Portions of document are illegible.

The D7 debris bed experiment is one in a series of experiments being conducted to investigate the coolability of fragmented reactor mterials. The D7 experiment is the second experiment which investigates heat removal from a stratified bed. The significance of particle stratification was demonstrated by the D6 experiment, which exhibited lower dryout powers of a factor of approximately two when compared to mixed beds. In addition to investigating a shallower bed as compared to the D6 experiment, the D7 experiment investigates a wider range of sodium subcooling achievable during the experiment. (ERA citation 07:050464)

DE82006766 PC **A02**/MF **A01**
Sandia National Labs., Albuquerque, NM.
D5 Debris Bed Experiment-Extended Post-Dryout Observations of a UO sub 2 -Sodium Particle Bed.
J. E. Gronager. 1982, 7p SAND-82-0104C, CONF-820704-1
Contract AC04-76DP00789
International topical meeting on LMFBR safety, Lyon, France, 18 Jul 1982, Portions of document are illegible.

The D5 experiment is the sixth in a series of debris bed coolability experiments. The principal objective of the experiment is to investigate debris bed behavior, for various sodium subcoolings, at temperatures exceeding 2100 exp 0 K. The experiment is scheduled for early February 1982. (ERA citation 07:050465)

DE82006770 PC **A02**/MF **A01**
Sandia National Labs., Livermore, CA.
Boiling Heat Removal in a Particle Bed.
R. J. Lipinski. 1982, 10p SAND-82-0056C, CONF-820704-6
Contract AC04-76DP00789
International topical meeting on LMFBR safety, Lyon, France, 18 Jul 1982, Portions of document are illegible.

A one-dimensional model for boiling in volume-heated particle beds is presented. The model includes the effects of channeling and predicts the dryout power and dry zone thickness for both uniform and stratified beds. The model also predicts the conditions required for channel penetration of a subcooled zone in a subcooled bed, and predicts the existence of downward heat removal by boiling in a bottom-cooled bed. The model is compared to 240 published dryout measurements including both deep and shallow beds, large and small particles, six fluids, five solids, and covering three orders of magnitude in the measured dryout flux. The model correlates this data with an average error of 60%. (ERA citation 07:050463)

DE82007619 MF **A01**
California Univ., Berkeley. Lawrence Berkeley Lab.
Kinetics of Laser Pulse Vaporization of Uranium Dioxide by Mass Spectrometry.
C. Tsai. Nov 81, 191p LBL-13679
Contract W-7405-ENG-48
Portions of document are illegible.
Best available copy from document source. Available in microfiche only.

Safety analyses of nuclear reactors require knowledge of the evaporation behavior of UO sub 2 at temperatures well above the melting point of 3140 K. In this study, rapid transient heating of a small spot on a UO sub 2 specimen was accomplished by a laser pulse, which generates a surface temperature excursion. This in turn vaporizes the target surface and the gas expands into vacuum. The surface temperature transient was monitored by a fast-response automatic optical pyrometer. The maximum surface temperatures investigated range from approx. 3700 K to approx. 4300 K. A computer program was developed to simulate the laser heating process and calculate the surface temperature evolution. The effect of the uncertainties of the high temperature material properties on the calculation was included in a sensitivity study for UO sub 2 vaporization. The measured surface temperatures were in satisfactory agreements. (ERA citation 07:046929)

DE82007965 PC **A11**/MF **A01**
Science Applications, Inc., San Leandro, CA.
Results of Phase 2 of the APRICOT Program. Final Report.
May 81, 231p DOE/SF/01112-T2
Contract AC03-76SF01112
Portions of document are illegible.

APRICOT (Analysis of Primary Containment Transients) is a cooperative activity for comparison and benchmarking of computational methods used to analyze LMFBR (Liquid Metal Fast Breeder Reactor) structural response to pressure loads from HCDA's (Hypothetical Core Disruptive Accidents). Independent experts review the calculations for the purpose of comparing computational results and methods of solution. Phase 2 involved a series of more complex calculations based on the simulation of scaled-down containment experiments. These calculations, as those of Phase 1, were performed by participants from Europe, Japan and the United States. The calculations were all in reasonable agreement with experimental determinations of hydrodynamic loads; however, the calculated plastic strains differed significantly from the experimental results. The unresolved issues from the Phase 2 calculations are currently being studied with the calculations for Phase 3. (ERA citation 07:043611)

DE82008011 PC **A02**/MF **A01**
General Electric Co., Sunnyvale, CA. Advanced Reactor Systems Dept.
COROPT Heterogeneous Flux Model.
H. S. Bailey, and C. N. Alexander. Sep 81, 8p DOE/SF/71031-T30, XL-898-10352-II
Contract AT03-76SF71031
Portions of document are illegible.

The PHYSICS module of COROPT calculates the power and flux distributions, power fractions, required fissile enrichment, and fuel mass balances. Sufficiently accurate data are clearly necessary for the results of the thermal hydraulic and fuel pin and assembly performance analysis to be acceptable. The smooth flux and power distribution model developed for the homogeneous core COROPT application has been shown to be accurate for homogeneous cores in the range of interest. However, this model and simple modifications of it have proven to not provide the accuracy desired for heterogeneous cores such as the LDP design. With the objective of providing a fast running approximate solution for the flux and power distributions and the other physics parametes, a new technique has been evaluated using the LDP core layout for test calculations. (ERA citation 07:050223)

DE82008012 PC **A02**/MF **A01**
General Electric Co., Sunnyvale, CA. Advanced Reactor Systems Dept.
Simplified Reactor Vessel Cell Heat Transfer Model for CONACS-1.
K. H. Chen. 22 Sep 81, 22p DOE/SF/71031-T32
Contract AT03-76SF71031
Portions of document are illegible.

A simplified reactor vessel cell thermal model was formulated. The model describes the thermal responses of sodium, fuel and steel remaining within the reactor vesel after a melt through of the vessel occurred, and the change in sodium levels in the reactor vessel and the reactor cell resulting from possible differences existing above the sodium pool surfaces. (ERA citation 07:050402)

DE82008071 PC **A04**/MF **A01**
General Electric Co., Sunnyvale, CA. Advanced Reactor Systems Dept.

Remote Equipment Technology. Final Report for GFY 1880.
D. C. Wadekamper. Sep 80, 72p DOE/SF/71031-T33, XL-895-00459-3
Contract AT03-76SF71031

An interactive graphics terminal and a desk-top computer were utilized to perform a Computer Aided Remote Maintenance simulation of a hypothetical equipment item. The equipment item included an electrical connection, hydraulic fitting, and simple bolt pattern which were maintained by remote manipulators during the simulation. These remote maintenance operations demonstrated that the Computer Aided Remote Maintenance simulation technology could be extended to complex equipment items. As a result, these equipment items can be evaluated from the standpoint of remote operation and maintenance prior to purchase or installation in a remote processing or cell arrangement. (ERA citation 07:050225)

DE82008124 PC **A02**/MF **A01**
Los Alamos National Lab., NM.
Prediction of Failure Modes for Concrete Nuclear-Containment Buildings.
T. A. Butler. 1982, 25p LA-UR-82-342, CONF-820705-2
Contract W-7405-ENG-36
Joint ASME/ANS nuclear engineering conference, Portland, OR, USA, 25 Jul 1982, Portions of document are illegible.

The failure modes and associated failure pressures for two common generic types of PWR containments are predicted. One building type is a lightly reinforced, posttensioned structure represented by the Zion nuclear reactor containment. The other is the normally reinforced Indian Point containment. Two-dimensional models of the buildings developed using the finite element method are used to predict the failure modes and failure pressures. Predicted failure modes for both containments involve loss of structural integrity at the intersection of the cylindrical sidewall with the base slab. (ERA citation 07:050176)

DE82008168 PC **A03**/MF **A01**
General Atomic Co., San Diego, CA.
Thermal-Gradient Interim Report in Support of LEU Fuel Decision.
F. C. Montgomery, and H. C. Allen, Jr. 28 Aug 81, 39p DOE/ET/35300-T6
Contract AT03-76ET35300

An update of the results of out-of-pile thermal gradient tests on TRISO LEU fuel candidates is provided. This includes data on fission product - SiC reactions and on fission product release. In addition, preliminary results of a new thermal gradient experiment using failed LEU fuel are given. Included is a description of fission product release, an enhanced kernel migration mechanism, and the R/B of the failed fuel. (ERA citation 07:053761)

DE82008218 PC **A03**/MF **A01**
United Engineers and Constructors, Inc., Philadelphia, PA.
Topical Report on Alternate Refueling Concepts.
Jun 81, 40p DOE/SF/02034-T75
Contract AC03-78SF02034
Portions of document are illegible.

This report presents the design, cost and construction schedule implications of constructing the short-term fuel storage facility either above or below the reactor containment building base mat. The short-term fuel storage facility is required as part of the reference in-vessel refueling system. This report will be used together with considerations for refueling reliability, maintenance accessibility, overall plant layout improvements and costs for additional refueling equipment to make a recommendation to the Technical Advisory Committee for the location of the short-term fuel storage facility in the reference plant. (ERA citation 07:056770)

DE82008264 PC **A03**/MF **A01**
Gas-Cooled Reactor Associates, La Jolla, CA.
Summary Report on Focusing HTGR Technology Programs.
1981, 38p DOE/SF/02034-T61
Contract AC03-78SF02034
Portions of document are illegible.

The program effort to focus technology development activities consists of work in three areas: the identification of Reference Plant Options; the identification of design data needs and supporting program requirements for these plants; and the development of management plans and tools consistent with the execution of candidate systems. (ERA citation 07:050202)

DE82008496 PC **A03**/MF **A01**
Gas-Cooled Reactor Associates, La Jolla, CA.
Program Prioritization System User Requirements Document for Gas Cooled Reactor Associates.
22 Sep 81, 40p DOE/SF/02034-T66
Contract AC03-78SF02034
Portions of document are illegible.

Efficient management of the national HTGR program requires the establishment of an information system that will facilitate a more rational allocation of resources and task prioritization consistent with program policies. The system described in this document provides a data analysis mechanism for processing top level summary status and planning information in a rapid, timely and selective manner. Data produced by the system can be used by management to provide a rational basis for prioritizing tasks, evaluating program changes and program planning regarding costs, schedules and overall program development logic. The purpose of this document is to delineate the program prioritization system (PPS) requirements for use as a guide to acquiring and implementing the system. (ERA citation 07:056769)

DE82008521 PC **A05**/MF **A01**
California Univ., Los Angeles. Dept. of Chemical, Nuclear, and Thermal Engineering.
Use of Expert Opinion in the Evaluation of Probabilities of Rare Events.
G. Apostolakis, and A. Mosleh. Jun 78, 88p UCLA-ENG-7834
Contract AT03-76SF70252
Portions of document are illegible.

The evaluation of probabilites of rare events in the context of the subjectivistic theory of probability is the subject of this work. Several useful subsidiary methods for the achievemnet of coherent probabilities are discussed with particular emphasis on experts' opinions. As an application, a distribution for the frequency of reactor core melts is assessed using the available experience with power reactors. This distribution is subsequently modified, via Bayes' theorem, to include the estimate derived by WASH-1400, which is treated as an expert's opinion. A probabilistic model for the credibility of this opinion is presented, which includes the critics' point of view. The resulting (posterior) distribution is the assessed distribution of the frequency of reactor core melts based on a body of knowledge which includes the available experience and the WASH-1400 estimate. (ERA citation 07:056990)

DE82009014 PC **A02**/MF **A01**
Lawrence Livermore National Lab., CA.
Evaluation of Soil Damping Techniques Used in Soil Structure Interaction Analysis of a Nuclear Power Plant.
T. A. Nelson. 24 Feb 82, 15p UCRL-86217, CONF-820707-1
Contract W-7405-ENG-48
International conference on soil dynamics and earthquake engineering, Southampton, UK, 13 Jul 1982.

A prediction of dynamic soil properties at the site of a nuclear power plant plays a very important role in the seismic analysis of the facility. Conventional modal analysis procedures can accommodate virtually any range of equivalent elastic soil stiffness which is used to characterize the site. However, high radiation damping associated with energy dissipation in the soil half-space is difficult to accommodate in an elastic modal solution to the dynamic problem. Several methods are available to combine the soil damping with the structural damping in a composite modal damping coefficient. However, even with this convenient representation, the resulting large fractions of critical damping can make modal solutions to the problems suspect. This paper is based on experience gained in this area during studies performed for the Nuclear Regulatory Commission involving seismic analyses of power plants. (ERA citation 07:058127)

DE82009077 PC **A02**/MF **A01**
Department of Energy, Washington, DC.
Assessment of the Need for and Feasibility of Establishing a National Reactor Engineering Simulator Facility.
Dec 81, 10p DOE/NE-0033

A study was conducted by the Department of Energy's Office of Nuclear Power Systems to determine the need for and feasibility of establishing a reactor engineering simulator facility at a National Laboratory. Input was obtained from a wide cross section of the Nation's nuclear industry, the Department's National Laboratories, the Nuclear Regulatory Commission (NRC), and the Advisory Committee on Reactor Safeguards in carrying out this study. Based on this input, the Department concludes that the proposed facility would not significantly contribute to the capability of the Nation's nuclear industry or the Department to foster research in generic design improvements and simplifications. Furthermore, the Department concludes that such a facility, although it is theoretically feasible, is not practical from an engineering viewpoint, and the significant national effort and expense, which would be required to develop, construct, and operate such a facility, is not justified. (ERA citation 07:046641)

DE82010046 MF **A01**
EG and G Idaho, Inc., Idaho Falls.
Field Measurements and Interpretation of TMI-2 Instrumentation: HP-R-211.
J. E. Jones, J. T. Smith, and M. V. Mathis. Jan 82, 179p GEND-INF-017-V.3
Contract AC07-76ID01570
Best available copy from document source. Available in microfiche only.

This report provides the information gathered by TEC on the area radiation monitor HP-R-211. This detector was located at 305 feet elevation, just inside the entry hatch (ante-room) used during initial entries into containment. This instrument consisted of a Victoreen Model 857-2 detector assembly connected to a Victoreen Model 856-2 panel alarm and approximately 520 feet of interconnecting cable. This instrument was believed to have failed due to low radiation level indications and due to a lack of response to the manually activated checksource in the detector. As a result of this failure, the detector was a candidate for early replacement to provide long-term radiation monitoring capability inside containment at the entry hatch. (ERA citation 07:046697)

NUREG/CR-2877 PC **A03**/MF **A01**
Sandia National Labs., Albuquerque, NM.
Investigation of Cable Deterioration in the Containment Building of the Savannah River Nuclear Reactor,
K. T. Gillen, R. L. Clough, and L. H. Jones. Aug 82, 40p SAND-81-2613
Contract DE-AC04-76DP00789

This report describes an investigation of the deterioration of polyethylene and polyvinylchloride cable materials which occurred in the containment building of the Savannah River nuclear reactor located at Aiken, South Carolina. Radiation dosimetry and temperature mapping data of the containment area indicated that the maximum dose experienced by the cable materials was only 2.5 Mrad at an average operating temperature of 43C. Considering this relatively moderate environment, the amount of material degradation seemed surprising.

PB83-854455 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Breeding Blankets: Fission Reactors. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 195p
Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning the design, test, and applications of breeding blankets to various types of breeder reactors. Studies include flow management, cross-section propagation, transport effects, and modeling of the core blankets, barrel and support structure. Many of the citations reference patents on breeding blankets. (Contains 195 citations fully indexed and including a title list.)

18J. Reactor Materials

DE82008352 MF **A01**
California Univ., Berkeley. Coll. of Engineering.
Design of Steel Energy-Absorbing Restrainers and Their Incorporation into Nuclear Power Plants for Enhanced Safety. Progress Report.
Mar 80, 146p DOE/ER/70296-T2
Contract AT03-76ER70296
Portions of document are illegible.
Best available copy from document source. Available in microfiche only.

This program for the development of steel energy-absorbing restrainers originated as a five year multi-institutional, interdisciplinary program. The resources of the University of California, Berkeley (UCB), the Earthquake Engineering Research Center, Richmond (EERC), Massachusetts Institute of Technology (MIT), and Battelle Pacific Northwestern Laboratories (BPNL) are utilized as well as advisors from industry, the utilities and the US Nuclear Regulatory Commission. The present progress report involves the areas of experimental testing on the shaking table at the EERC, restrainer device design and testing, structural analyses and materials testing. (ERA citation 07:046819)

DE82012801 PC **A04**/MF **A01**
Lawrence Livermore National Lab., CA.
Analysis of the Role of an Interfacility SNM Accounting System.
J. L. McDonnel, P. D. Chilton, G. E. Kufahl, A. A. Vergari, and D. R. Dunn. 22 Feb 82, 51p UCID-19126
Contract W-7405-ENG-48

Lawrence Livermore National Laboratory (LLNL) undertook the task of analyzing the actual and potential value of an interfacility NRC material accounting system in deterring and detecting both material diversion and facility material accounting data falsification. The most important conclusion is that only relatively minor changes are needed to upgrade the current NRC interfacility reporting system. The emphasis of the task was on evaluating the usefulness of an NRC-monitored material accounting information system in providing protection against accounting fraud at the plant management or corporate level. The Nuclear Materials Management and Safeguards System (NMMSS) and the NRC Safeguards Status Report System (SSRS), the principal constituents of the current interfacility NRC material accounting information system, are described. Their relationship is shown in two information flow diagrams. Deterministic accounting checks and balances are discussed, both for the current NRC interfacility material accounting system and for an upgraded system. Detection mechanisms are described that would use currently available data and that could be exercised by the NRC in its safeguards management role. Additional checks and balances are recommended, with corresponding changes in data reporting requirements, to upgrade NRC interfacility material accounting system. (ERA citation 07:042636)

18K. Reactor Physics

DE82010976 PC **A03**/MF **A01**
Los Alamos National Lab., NM.
Los Alamos Benchmarks: Calculations Based on ENDF/B-V Data.
R. B. Kidman. Nov 81, 47p LA-9037-MS, ENDF-318
Contract W-7405-ENG-36
Portions of document are illegible.

The new and revised benchmark specifications for nine Los Alamos National Laboratory critical assemblies are used to compute the entire set of parameters that were measured in the experiments. A comparison between the computed and experimental values provides a measure of the adequacy of the specifications, cross sections, and physics codes used in the calculations. (ERA citation 07:043574)

18M. Reactors (Non-Power)

DE82008522 PC **A02**/MF **A01**
General Electric Co., Sunnyvale, CA. Advanced Reactor Systems Dept.
MRS Reformer Design and Heat Balance.
Jan 82, 10p DOE/ET/34034-T12
Contract AC03-80ET34034
Portions of document are illegible.

This memo presents the bases to define the modular reactor plant parameters, reformer design, heat balance, and plant performance. The key ground rules for the design of the process plant are, similar to those for the monolithic reactor plant, 55% reformer power split and 60% methane conversion so that a comparison of the two reactor concepts will be more appropriate. The selection of the steam-to-methane ratio is the key to the process definition. The sensitivity of reformer design to steam-methane ratios was performed to determine reformer design requirements. The reformer design study was based on a vertical linear reactor reformer arrangement with upflow. The performance of reformer plant was also assessed to estimate the economic impacts of steam-methane ratios on end product costs. (ERA citation 07:056912)

DE82008549 PC **A02**/MF **A01**
Gas-Cooled Reactor Associates, La Jolla, CA.
High-Temperature Process Heat. Interim Design and Cost Status Report, FY 1981.
Oct 81, 16p DOE/SF/02034-T55
Contract AC03-78SF02034
Portions of document are illegible.

Studies conductd on HTGR systems in FY 1980 were concluded in Application Study Reports to describe the preconceptual system designs to that point and discuss possible applications for three variations of the systems; the steam cycle/cogeneration plant, the higher temperature reformer plant, and the gas turbine concept. The HTGR-Reformer Application Study was conceived and directed to evaluate the HTGR-R with a core outlet temperature of 850 exp 0 C as a near-term Lead Project and as a vehicle to long-term HTGR Program Objectives. The scope of this effort included evaluations of the HTGR-R technology, evaluation of potential HTGR-R markets, assesment of the economics of commercial HTGR-R plants, and the evaluation of the program scope and expenditures necessary to establish HTGR-R technology through the completion of the Lead Project. (ERA citation 07:050297)

DE82008551 PC **A02**/MF **A01**
Gas-Cooled Reactor Associates, La Jolla, CA.
High-Temperature Process Heat 950 exp 0 C DC Vs. 850 exp 0 C IDC Baseline Plant Cost Comparison.
1981, 23p DOE/SF/02034-T64
Contract AC03-78SF02034
Portions of document are illegible.

This evaluation compares two configurations of the 1170 MWt HTGR-R: the 950 exp 0 C direct cycle (DC) plant vs. the 850 exp 0 C indirect cycle (IDC) baseline plant. The subject evaluation is comprised of the following attachments: bases and assumptions for the cost and economic evaluations; capital cost and economic evaluation; major design differences; major technical issues; and drawings, as listed, for both plants. Drawing C-5001 is a composite plot plan which highlights the differences between the two plants. (ERA citation 07:056918)

19.

ORDNANCE

19A. Ammunition, Explosives, and Pyrotechnics

DE82011568 PC **A02**/MF **A01**
Sandia National Labs., Albuquerque, NM.
Design and Simulation of a Unique Signal Mechanism.
P. A. Erickson, G. M. Ferguson, and E. W. Kenderdine. 1982, 15p SAND-82-0617C, CONF-820905-1
Contract AC04-76DP00789
17. biennial mechanisms conference on design engineering, Washington, DC, USA, 12 Sep 1982.

The design and operation of an unique signal mechanism is described. The mechanism remains locked until a unique signal sequence is inserted and then the mechanism moves to an enable position. An erroneous pattern causes the mechanism to lock requiring manual reset. The dynamic performance of the mechanism is evaluated using Sandia's Mechanism Simulation and Analysis Program. The simulation results are compared to experimental data. (ERA citation 07:054965)

20.

PHYSICS

20A. Acoustics

N82-34102/5 PC **A04**/MF **A01**
Beam Engineering, Inc., Sunnyvale, CA.
Ensemble Averaging of Acoustic Data.
P. K. Stefanski. Sep 82, 64p
NASA ORDER A-88065-B

A computer program called Ensemble Averaging of Acoustic Data is documented. The program samples analog data, analyzes the data, and displays them in the time and frequency domains. Hard copies of the displays are the program's output. The documentation includes a description of the program and detailed user instructions for the program. This software was developed for use on the Ames 40- by 80-Foot Wind Tunnel's Dynamic Analysis System consisting of a PDP-11/45 computer, two RK05 disk drives, a tektronix 611 keyboard/display terminal, and FPE-4 Fourier Processing Element, and an analog-to-digital converter.

N82-34188/4 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
Noise Measurement in Wind Tunnels, Workshop Summary.
D. H. Hickley, and J. Williams. Sep 82, 36p NAS 1.15:84219, A-8843, NASA-TM-84219
Workshop on Aeroacoustics Tunnel Testing Techniques Held at Moffett Field, Calif., Mar. 1979.

In reviewing the progress made in acoustic measurements in wind tunnels ove the 5-yr span of the workshops, it is evident that a great deal of progress has occurred. Specialized facilities are now on line, special measurement techniques were developed, and corrections were devised and proven. This capability is in the process of creating a new and more correct data bank on acoustic phenomena, and represents a major step forward in acoustics technology. Additional work is still required, but now, rather than concentrating on facilities and techniques, researchers may more profitably concentrate on noise-source modeling, with the simulation of propulsor noise source (in flight) and of propulsor/airframe airflow characteristics. Promising developments in directional acoustic receivers and other discrimination/correlation techniques should now be regularly exploited, in part for model noise-source diagnosis, but also to expedite extraction of the lone source signal from any residual background noise and reverberation in the working chamber and from parasitic noise due to essential rigs or instrumentation inside the airstream.

PB83-115733 PC **A02**/MF **A01**
Centre Technique des Industries Mecaniques, Senlis (France).

Improvement of the Design and Utilization of Acoustical Transmission Sensors.
J. Roget. Oct 82, 21p CETIM-15Y041
Trans. of mono. Amelioration de la Conception et de l'Utilisation des Capteurs e'Emssion Acoustique, n.p. 33p Jun 81.

Summary of the bibliographical and experimental studies conducted. Comparative analysis of the characteristics of commercially-available piezo-electrical ceramics, improvement of the construction of sensors (testing of bonding agents). Assessment of 5 types of non-piezo-electrical sensors (electret, optical, electromaagnetic, magneto-restrictive and capacity type). First approach to calibration problems.

20B. Crystallography

PB83-131649 Not available NTIS
National Bureau of Standards, Washington, DC.
Synchrotron Radiation Topography.
Final rept.,
M. Kuriyama, W. J. Beottinger, and G. G. Cohen. 1982, 8p
Pub. in Annual Review of Materials Science 12, p23-50 1982.

Synchrotron x-ray topography has its roots in classical laboratory x-ray work performed between 1930 and 1960. The ability of the x-ray topographic technique to image microstructural details related to crystalline imperfection, has long given it a position of importance in materials science.

20D. Fluid Mechanics

DE82009015 PC **A02**/MF **A01**
Lawrence Livermore National Lab., CA.
Solution of the Multi-Dimensional, Incompressible Navier-Stokes Equations Using Low-Order Finite Elements and One-Point Quadrature.
S. T. Chan, and P. M. Gresho. Mar 82, 10p UCRL-86601, CONF-820702-4
Contract W-7405-ENG-48
International symposium on finite element methods in flow problems, Tokyo, Japan, 26 Jul 1982, Portions of document are illegible.

The modeling goal is to develop accurate and efficient, yet reasonably versatile numerical models for simulating the evolution of the velocity, temperature, and pollutant concentration fields associated with air flow over complex terrain in the planetary boundary layer. Since both the physics (e.g., stratified shear flows) and the geometry are complex, fairly fine spatial resolution (say, approx. 10 exp 4 nodes) will often be required. The longer-term goal is to be able to do faster than real time simulations in response to emergency situations. It is with these points in mind that a finite element code was developed which entails many short-cuts and simplifications compared to the conventional Galerkin finite element method (GFEM); in fact, the resulting scheme is probably better described as a hybrid method (FEM/FDM). Many aspects of these short-cuts have been described and/or are discussed in more detail elsewhere. Here, attention is focused on the effects of using 1-poing quadrature to approximate the resulting Galerkin integrals. (ERA citation 07:051963)

N82-33662/9 PC **A04**/MF **A01**
Cambridge Univ. (England). Dept. of Engineering.
The Fluid Mechanics of Non-Nucleating Wet Steam Flows.
J. B. Young. 1982, 63p CUED/A-TURBO/TR-111, ISSN-0309-6521

A semi-analytical, theoretical treatment of high speed, non-nucleating wet steam flows is presented and demonstrates both qualitatively and quantitatively the salient features of such flows. Departures from both thermal and inertial equilibrium occur, each characterized by an individual relaxation time, but in general thermal nonequilibrium effects dominate over inertial ones. The analysis shows that for flows characterized by a constant rate of expansion an initial transient phase (governed by the thermal relaxation time) is followed by a region of dynamic equilibrium where the degrees of nonequilibrium (the supercooling and slip velocity) remain approximately constant. The nonequilibrium parameters in the regime are shown to be functions of the pressure and expansion rate, as well as the relaxation times. If the expansion rate is continually changing the supercooling and slip velocity adjust to these changes (with an exponential lag) in an attempt to maintain a state of dynamic equilibrium. The departures from equilibrium are also characterized by a production of entropy which is responsible for the thermodynamic and inertial wetness losses observed in steam turbines. Loss coefficients specifying these quantities are defined and the analysis shows how they may be calculated.

N82-33663/7 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.
Computation of Two-Dimensional Turbulent Flow at Subsonic Mach Numbers over Thick Trailing Edges.
P. Drescher. Aug 82, 22p NAS 1.15:84278, A-9029, NASA-TM-84278

An implicit time marching finite difference method is used to predict two dimensional turbulent flow at a Reynolds number of 440,000 and a Mach number of 0.574 over a shortened NACA 0012 airfoil with a trailing edge of 4.5% thickness and semicircular shape. The flow is found to be unsteady but periodic in the trailing edge region. Thus, lift and drag fluctuate at small amplitudes around mean values and at distinct frequencies.

N82-33672/8 PC **A05**/MF **A01**
Kernforschungsanlage Juelich G.m.b.H. (Germany, F.R.).
Velocity and Temperature Profiles in Rough Annuli.
L. Meyer. Apr 81, 90p DE82-780258, KFK-3163

Velocity and temperature profiles were measured in an annular flow cross section. Three different rough rods in two outer tubes each were investigated. The slopes of the nondimensional logarithmic velocity profile in both the inner rough zone and the outer smooth zone vary with the Reynolds number. The slopes of the nondimensional temperature profile deviate from a logarithmic line in a large portion of the flow cross section. The turbulent Prandtl number is smaller than one and varies with the distance from the wall.

N82-33919/3 PC **A02**/MF **A01**
Stanford Univ., CA. Dept. of Aeronautics and Astronautics.
Density Measurement in Air with Saturable Absorbing Seed Gas.
Final Report, 1 Jul. 1980 - 1 Jul. 1981.
D. Baganoff. Sep 82, 9p NAS 1.26:169420, NASA-CR-169420
Contract NAG2-36

Approaches which have the potential to make density measurements in a compressible flow, where one or more laser beams are used as probes, were investigated. Saturation in sulfur hexafluoride iodine and a crossed beam technique where one beam acts as a saturating beam and the other is at low intensity and acts as a probe beam are considered. It is shown that a balance between an increase in fluorescence intensity with increasing pressure from line broadening and the normal decrease in intensity with increasing pressure from quenching can be used to develop a linear relation between fluorescence intensity and number density and lead to a new density measurement scheme. The method is used to obtain a density image of the cross section of an iodine seeded underexpanded supersonic jet of nitrogen, by illuminating the cross section by a sheet of laser light.

20E. Masers and Lasers

N82-33695/9 PC **A05**/MF **A01**
Norwegian Defence Research Establishment, Kjeller.
Continuously-Tunable High-Repetition Rate RF-Excited CO2 Waveguide Laser.
S. Lovold. Jul 82, 100p NDRC/PUBL-82/1002

The concept of pumping a CO2 laser with a radio frequency discharge at multiatmospheric pressures in order to obtain continuous frequency tuning was investigated both theoretically and experimentally. Experimentally 40.68 MHz rf excitation of discharges between parallel plate electrodes with up to 7 to 8 peak rf power was investigated. Emphasis has been laid on how to attain a stable glow discharge with sufficiently long duration before arcing for integration of enough RF power in the discharge to reach threshold for laser oscillation was emphasized. A 10 atm rf excited CO2 waveguide laser was developed. With no dispersive elements in the laser resonator and with a 2% output coupler, input RF power threshold for laser oscillation was 2 kW at 10 atm. Peak output power was 1.5 kW for 7 to 8 kW input RF power. The output pulse has the form of approximately 300 ns duration gain switcheed pulse followed by a tail at lower power. An efficiency (input RF energy/laser output energy) of 2% was measured for the gain switched pulse. The laser was operated with pulse repetition rates in excess of 1 kHz, limited primarily by the available gas flow capacity. Continuous frequency tuning between the R(12) and R(14) lines in the 10.4 micron band was demonstrated.

PB83-125633 PC **A04**/MF **A01**
National Bureau of Standards, Boulder, CO. National Engineering Lab.
Documentation of the NBS C, K, and Q Laser Calibration Systems.
William E. Case. Sep 82, 74p NBSIR-82-1676

This report provides a complete guide for the documentation of the NBS laser power and energy calibration systems. The report also describes a detailed procedure for operating the three (C, K, and Q) calibration systems under computer control.

PB83-853986 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Carbon Dioxide Waveguide Lasers. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 114p
Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning the design, development, and applications of carbon dioxide waveguide lasers. The operation, performance characteristics, and factors affecting the lasers are considered. (Contains 121 citations fully indexed and including a title list.)

PB83-854380 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Neodymium YAG Lasers. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 292p
Supersedes PB82-860677.

This bibliography contains citations concerning the properties and applications of neodymium-yttrium-aluminum-garnet lasers. Applications include welding of parts such as printed circuits, medical applications, telecommunication systems, and optical pumping for high powered lasers. (This updated bibliography contains 256 citations, 57 of which are new entries to the previous edition.)

20F. Optics

PAT-APPL-6-402 403 PC **A02**/MF **A01**
Department of the Navy, Washington, DC.
High Resolution Diffraction Grating.
Patent Application,
Louis Sica. Filed 27 Jul 82, 17p AD-D009 747/7
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of application available NTIS.

This invention relates to spectrographic instruments in general and more particularly pertains to high resolution diffraction gratings. It is an object of the present invention to increase the resolving power of a diffrac-

tion grating without increasing its width. The above and other objects are achieved in the present invention which comprises an optical prism with a diffraction grating formed on one surface. The prism is designed so that if an input beam is incident normal to the input surface then the efficiency of the order diffracted by the grating in a direction opposite to the direction of the input beam is greater than a predetermined value. If the prism is fabricated of a material with index of refraction n, then the resolving power of the grating is increased by a factor of n.

PB83-854307 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Integrated Optical Devices. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 169p
Supersedes PB82-863127.

This bibliography contains citations concerning the design, performance, materials, fabrication, and uses for integrated optical devices. Consideration is given to optical waveguides, optical signal or information processing, optical circuit fabrication, and optoelectronic coupling or switching. (This updated bibliography contains 147 citations, 27 of which are new entries to the previous edition.)

PB83-854547 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Underwater Light. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 233p
Supersedes PB82-861071.

This bibliography contains citations concerning the factors affecting the attenuation of light in ocean waters in terms of light scattering, turbidity, and refraction at the water-atmosphere interface. Optical systems for underwater camera and television equipment, and laser optics are considered. The effect of internal waves on light refraction, and remote sensing of biological organisms in sea water are included. (This updated bibliography contains 211 citations, 41 of which are new entries to the previous edition.)

PB83-854745 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Adaptive Optics. 1972-November, 1982 (Citations from the International Aerospace Abstracts Data Base).
Rept. for 1972-Nov 82.
Nov 82, 230p
Supersedes PB82-855875.Prepared in cooperation with the National Aeronautics and Space Administration, Washington, DC.

This bibliography contains citations concerning the concepts, technology, and systems of adaptive optics. Also included is the application of adaptive optics to such topics as compression of digitized images, laser pointing and tracking, astronomy, and optical propagation. The design of adaptive wavefront compensation systems is also considered relative to wavefront sensors and wavefront correctors. (This updated bibliography contains 229 citations, 39 of which are new entries to the previous edition.)

20G. Particle Accelerators

DE82011716 PC **A14**/MF **A01**
Wisconsin Univ.-Madison.
SNEAP 80: Symposium of Northeastern Accelerator Personnel.
J. H. Billen. 1980, 314p DOE/ER/00007-933, CONF-8010111-
Contract AC02-76ER00007
Symposium of Northeastern Accelerator personnel, Madison, WI, USA, 13 Oct 1980, Portions of this report are illegible.

Reports of operations are presented for twenty-seven facilities, along with reports on accelerators in progress, ion sources, insulating gases, charging systems, stripping foils, accelerating tubes, and upgraded accelerator systems. (ERA citation 07:054827)

20H. Particle Physics

DE82007720 PC **A02**/MF **A01**
Harvard Univ., Cambridge, MA. Div. of Applied Sciences.
Theory of High-Energy-Collision Processes. Technical Progress Report, January 1-December 31, 1981.
1982, 6p DOE/ER/03227-75
Contract AC02-76ER03227

Progress is described in the following areas: (1) several years ago, surprisingly simple expressions were obtained for the differential cross sections of e exp + e exp - implies mu exp + mu exp - gamma and e exp + e exp - implies e exp + e exp - gamma at high energies. Such simple expressions were generalized to twelve other similar radiative processes in QED and QCD. Afterwards, it was found that these results can be derived easily with the help of helicity amplitudes. This method is being investigated for many other radiative processes; (2) in the two-dimensional Ising model, the horizontal and vertical interaction energies are usually taken to be different. When this idea of different interactions in different directions is applied to the Z sub 2 lattice gauge theory in four dimensions, a limiting case is found which is exactly solvable. Contrary to numerical calculations at the symmetry point, the phase transition is found to be of second order; (3) on the subject of supersymmetry, general helicity and spin sum rules were obtained for massless and massive supermultiplets, and a functional integral approach was found as a natural setting for Witten's criterion for the occurrence of dynamic symmetry breaking of supersymmetry. A systematic and exhaustive analysis of explicit soft breaking of global supersymmetry has also been carried out using the methods of superfields; (4) the renormalization of the massless Thirring model in the neighborhood of g = - pi /2 was studied. The results are consistent with those found previously by placing the model on a lattice; and (5) in studying the effect of laboratory temperature on scattering processes, it was found that transport phenomena play an important role. As a preparation for this study, an exactly solvable case of the nonlinear Boltzmann equation has been found and studied. (ERA citation 07:052071)

DE82008300 PC **A02**/MF **A01**
Oregon Univ., Eugene. Inst. of Theoretical Science.
Decays of Vectors into eta' gamma and the Structure of eta'.
N. G. Deshpande, and G. Eilam. Dec 80, 10p DOE/ER/70004-293
Contract AT06-76ER70004
Portions of document are illegible.

Using the known coupling of eta' to two gluons, we predict a sizable branching ratio for UPSILON implies eta' gamma of approximately 0.1%. We point out the importance of measuring the decays of vectors into eta' gamma and present further predictions of UPSILON implies eta gamma , psi' implies eta'(eta) gamma and phi implies eta' gamma . (ERA citation 07:052006)

DE82008301 PC **A02**/MF **A01**
Oregon Univ., Eugene. Inst. of Theoretical Science.
Difficulty for Weinberg Model of CP Nonconservation Through Higgs Exchange.
N. G. Deshpande. Jan 81, 5p DOE/ER/70004-294
Contract AT06-76ER70004
Portions of document are illegible.

We evaluate the CP violation parameter element of'/ element of in the Weinberg model of CP nonconservation. When gluon exchange effects are included, we find element of'/element of approx. -.045, which is in conflict with the experimental measurement element of'/element of = -.003 +- .015. (ERA citation 07:055471)

DE82008362 PC **A02**/MF **A01**
Oregon Univ., Eugene. Inst. of Theoretical Science.
Inclusive Production of Meson Resonances and the Sea-Quark Distributions in the Proton.
X. Qu-bing. Apr 81, 15p DOE/ER/70004-312
Contract AT06-76ER70004
Portions of document are illegible.

The application of the recombination model is extended to the production of meson resonances. The x distributions of mesons, produced in the pp reactions, including resonances, were found to display certain simple relations, which are independent of specific assumption about the sea-quark distributions. These predictions can be used both to examine the model and to differentiate between the distributions of strange and non-strange sea-quarks. In the smaller x region the shapes of meson inclusive distributions sensitively depend on the sea-quark distribution. Because in the pseudo scalar meson case, that is just in the same region where contamination from the resonance decay is serious, we therefore use the resonance production to determine directly the sea-quark distributions. If we assume that the sea-quark of all three flavors have the same x dependence, with only the normalization of the strange quark distribution being suppressed, good agreement with the available data can be achieved. And, with the distribution of sea-quark known, the inclusive distribution shape of produced meson can then be determined without any further adjustable parameters. (ERA citation 07:052011)

N82-34197/5 PC **A02**/MF **A01**
Stanford Univ., CA. Inst. for Plasma Research.
Emission, Absorption and Polarization of Gyrosynchrotron Radiation of Mildly Relativistic Particles.
V. Petrosian, and J. M. Mctiernan. 28 Sep 82, 21p
NAS 1.26:169416, NASA-CR-169416
Contract NGR-05-020-668

Approximate analytic expressions for the emissivity and absorption coefficient of synchrotron radiation of mildly relativistic particles with an arbitrary energy spectrum and pitch angle distribution are given. From these, an expression for the degree of polarization is derived. To accomplish this, previously developed methods of integration are used. The analytic results are compared with numerical results for both thermal and non-thermal (power law) distributions of particles.

N82-34207/2 PC **A02**/MF **A01**
Joint Inst. for Nuclear Research, Dubna (USSR). Lab. of High Energy.
Inelastic Interactions of 4.5 Gev/C Protons with Emulsion Nuclei Not Accompanied by Relativistic Charged Particles.
M. Sumbera, and S. Vokal. 1981, 9p DE82-701020, JINR-E-1-81-436

Experimental results on proton-emulsion interactions without charged particles creation are presented and analyzed. The role of this type of events through non-negligible at energies of several GeV decreases rapidly with increasing projectile energy. Except for broader multiplicity distribution of gray particles all other characteristics are similar to the case of multiple production. A comparison to the cascade evaporation model has been made and reasonable agreement has been found.

20I. Plasma Physics

DE82001702 PC **E04**/MF **A01**
Department of Energy, Washington, DC. Office of Technical Information.
Alfven Wave. DOE Critical Review Series.
A. Hasegawa, and C. Uberoi. 1982, 137p DOE/TIC-11197

This monograph deals with the properties of Alfven waves and with their application to fusion. The book is divided into 7 chapters dealing with linear properties in homogeneous and inhomogeneous plasmas. Absorption is treated by means of kinetic theory. Instabilities and nonlinear processes are treated in Chapters 1 to 6, and the closing chapter is devoted to theory and experiments in plasma heating by Alfven waves. (ERA citation 07:045257)

DE82008110 PC A02/MF A01
Los Alamos National Lab., NM.
Interferometric Studies of Plasma-Density Fluctuations in ZT-40M, Using Time-Delayed Correlation Techniques.
A. R. Jacobson, and P. R. Forman. 1982, 5p LA-UR-82-496, CONF-820618-1
Contract W-7405-ENG-36
International conference on plasma physics, Goteborg, Sweden, 7 Jun 1982.

Density fluctuations in a reversed-field pinch have been studied using multichord CO sub 2 -laser interferometry. Both non-periodic and quasi-periodic oscillations have been observed. The latter are m = 0 and m = 1 and remain torodially localized until the final stage of the discharge, when the m = 0 oscillation becomes toroidally coherent. (ERA citation 07:048702)

N82-34235/3 PC A03/MF A01
Nagoya Univ. (Japan). Inst. of Plasma Physics.
An Analysis of Current Drive by Travelling Wave Based on Theory of Intrinsic Stochasticity.
A. Murakami, and Y. Midzuno. Apr 82, 32p IPPJ-575

The mechanism of the current generation in a collisionless plasma by a train of travelling mirrors with modulated phase velocity is studied based on the theory of intrinsic stochasticity. It is shown that, if the phase modulation is small, the main contribution to the current generation comes from the phase mixing of the trajectories of trapped electrons in each Fourier component of a driving wave. For the case of a moderate phase modulation, however, formation of a large stochastic region due to the overlapping of primary resonances is very effective for increasing the generated current. Large phase modulation has little advantage in the current generation because the stochastic regions are formed at random in the phase plane. The results of analytical evaluation based on the above theory agree quite well with results of numerical experiments.

N82-34237/9 PC A02/MF A01
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Formation of Relativistic Electron Beam Rings in a Conducting Cavity.
A. Mohri, Y. Tomita, M. Hasegawa, S. Miyake, and K. Narihara. May 82, 10p IPPJ-583

An experiment is described which demonstrates that a relativistic electron beam ring of spheromak configuration is formed and stably kept in a conducting cavity of rectangular cross section without any help of external magnetic field for equilibrium. A rotating electron beam was injected through a hole of the cavity.

N82-34240/3 PC A02/MF A01
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Simple Method of Sheet Plasma Production for High Current Negative Ion II (Curved Sheet Plasma).
J. Uramoto. Jun 82, 17p IPPJ-597

Sheet plasmas with various curvatures can be produced by arranging two different forms of rectangular permanent magnets on both sides of a cylindrical plasma column along a magnetic field. The sheet plasmas are very useful for focusing negative ion beams produced by surface conversion, which are called 'Yatsuhashi' (curved cracknel) plasma.

N82-34244/5 PC A02/MF A01
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Lax-Pair Operators for Squared Eigenfunctions in the Inverse Scattering Transformations.
K. H. Iino, and Y. H. Ichikawa. May 82, 22p IPPJ-589

Alternative Lax-pair operators are constructed for the Korteweg-de Vries equation and the modified Korteweg-de Vries equation using a modification of the algorithm of Chen, Lee, and Liu. These Lax-pair operators stand as the Lax-pair operators for the squared eigenfunction and the sum of squared eigenfunctions of the Ablowitz-Kaup-Newell-Segur inverse scattering transformation for these celebrated nonlinear evolution equations.

N82-34245/2 PC A03/MF A01
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Self-Consistent Analysis of Collisional Loss in a Spatially Varying Magnetic Mirror.
K. H. Sato. May 82, 47p IPPJ-588

Expressions for the particle and energy loss fluxes of a plasma in a realistic mirror configuration are obtained using self consistent analytic solutions of a linearized Fokker-Planck equation for ions and electrons. A magnetic field variation along field lines is taken into account, and both interactions between ions and electrons and effects of the ambipolar potential are included in the analysis. The results show that a value of bar n tau sub n bar n = volume-averaged particle density, tau sub n = particle confinement time) decreases due to effects of the magnetic field variation by a factor of two as compared with the value for the magnetic square-well and the total energy confinement time is almost equal to the particle confinement time.

N82-34247/8 PC A02/MF A01
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Evolution of Ring Current Formed by Relativistic Electron Beam Injection into a Charge But Not Current Neutralizing Plasma.
K. Narihara. Apr 82, 21p IPPJ-576

The time evolutions of the azimuthal momentum distribution of the axisymmetrically injected electrons and the resulting ring current are self consistently analyzed under the assumption that no return current is induced in the background plasma. It is shown that the ring current grows linearly with time for a characteristic time from the start of beam injection, and afterthere it tends to saturate at some level. The dependence of the time evolution of the ring current on the beam energy at injection and on the injection current is also obtained.

N82-34248/6 PC A02/MF A01
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Alternative Representations of the Inverse Scattering Transformation for the K-D V Equation and the Modified K-D Equation.
K. H. Iino, and Y. H. Ichikawa. May 82, 8p IPPJ-581

An alternative representation of the inverse scattering transformation was found accidentally for the Korteweg-de Vries equation. Transformation of the eigenfunction reduces this representation to the original scheme discovered by Gardner, Greene, Kruskal and Miura. A similar analysis for the modified Korteweg-de Vries equation leads to a new representation of the inverse scattering transformation.

N82-34251/0 PC A02/MF A01
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Interrelation of Alternative Sets of Lax-Pairs for a Generalized Nonlinear Schroedinger Equation.
K. H. Iino, and Y. H. Ichikawa. May 82, 16p IPPJ-585

A given nonlinear evolution equation is used in an operator equation, which stands as a compatibility condition for an eigenvalue problem with an isospectral operator L and a temporal evolution equation of its eigenfunction characterized by an operator A. A unified scheme of the inverse scattering transformation for several nonlinear evolution equations are presented.

N82-34252/8 PC A02/MF A01
Nagoya Univ. (Japan). Inst. of Plasma Physics.
Average beta Value of Axially Symmetric Plasma.
S. Kaneko, and K. Chiyoda. May 82, 8p IPPJ-586

A useful expression for an average beta value is derived by using the Grad-Shafranov equation. The plasma is assumed to be confined in a finite region and to be in an axially symmetric magnetohydrodynamic equilibrium. The magnetic flux function psi is assumed to vanish on the plasma surface. The average beta value beta is defined by 8 pi integral pdV/integral B(2)dV, where p is the kinetic pressure, B is the strength of the magnetic field, and the integrations are carried out over the whole plasma region. when p is proportional to psi (alpha) (alpha is a positive number) and the toroidal magnetic field is absent, the value of beta is shown to be 2/alpha. This value is independent of the shape of the plasma.

N82-34253/6 PC A02/MF A01
Tohoku Univ., Sendai (Japan). Dept. of Electrical Engineering.
Propagation Characteristics in a Magnetized Plasma-Waveguide Near the Ion Cyclotron Frequency.
T. Ohnuma, and T. Watanabe. Jun 82, 13p IPPJ-598

Propagation characteristics of electrostatic waves near an ion cyclotron frequency are investigated in a magnetized plasma waveguide. The dispersion curves and the damping factor near the fundamental and the second harmonic ion cyclotron frequency are studied for fixed perpendicular wave numbers.

N82-34256/9 PC A03/MF A01
Middlebury Coll., VT. Dept. of Physics.
Structure of Field Rotating Disturbances in Warm Plasma.
Final Technical Report.
R. Wolfson. 31 Aug 82, 42p NAS 1.26:169359, NASA-CR-169359
Contract NAGW-54
Submitted for Publication.

A model in which thermal effects are simulated through use of a multibeam plasma distribution function is developed and investigated to see if solutions which take an initially uniform magnetized plasma to a new uniform state with different field orientation are possible. The momentum conservation integrals are found to admit two classes of such solutions, but only one class exhibits appropriate asymptotic behavior. Extensive numerical integrations have failed to demonstrate the existence of the desired solutions.

20J. Quantum Theory

N82-34289/0 PC A02/MF A01
Weizmann Inst. of Science, Rehovoth (Israel). Dept. of Physics.
Mean Field Theory for Lattice Gauge Systems with Fermions.
R. Horsley. Sep 81, 19p DE82-700785, WIS-PH-81-50
Supported in Part by the Israel Commission for Basic Research and the US-Israel Binational Science Foundation.

Mean field calculations for lattice gauge theories are extended to include fermions. The addition of a Wilson fermion leads to an almost negligible change of the weak to strong coupling transition point. The plaquette average is also only weakly affected.

PB83-853218 PC N01/MF N01
National Technical Information Service, Springfield, VA.
Angular Momentum Theory and Applications. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 174p

This bibliography contains citations concerning angular momentum theory and applications in atomic and molecular spectra, nuclear structure, particle physics, and general relativity. Angular momentum coupling schemes and operators of many particle systems and complex angular momentum theories of scattering are considered. Computer programs and calculation techniques of angular momentum coefficients are included. (Contains 184 citations fully indexed and including a title list.)

20K. Solid Mechanics

N82-33730/4 PC A04/MF A01
Technion - Israel Inst. of Tech., Haifa.
Vibrations of Axially Loaded Stiffened Cylindrical Panels with Elastic Restraints.
J. Singer, O. Rand, and A. Rosen. Jul 81, 54p TAE-439
Sponsored in Part by Dfg and Rwth.

The vibrations and buckling of preloaded stiffened cylindrical panels with different boundary conditions, including elastic restraints are analyzed. The analysis uses linear, smeared stiffener, Flugge type theory. A computer program VIPAL was developed and its details are presented.

N82-33731/2 PC A03/MF A01
Technion - Israel Inst. of Tech., Haifa. Dept. of Aeronautical Engineering.

Further Initial Imperfection Measurements of Integrally Stringer Stiffened Cylindrical Shell, Series 2.
R. Yaffe, J. Singer, and H. Abramovich. Jul 81, 41p TAE-404

The initial geometric imperfections of 10 inch diameter integrally stringer stiffened cylindrical shells were measured in a special scanning system. The system consists essentially of a probe, traveling along a helical path inside the shell, whose output is recorded digitally on a minicomputer. The imperfection measurements of 6 shells, employed in different test programs, are presented both in graphical form and as coefficients of Fourier series, a standard representation for imperfection data.

N82-33738/7 PC **A03**/MF **A01**
Dayton Univ., OH. Dept. of Aerospace Mechanics.
A Preliminary Study of Crack Initiation and Growth at Stress Concentration Sites.
Interim Technical Report, 1 Jan. - 31 Aug. 1982.
D. S. Dawicke, J. P. Gallagher, G. A. Hartman, and A. M. Rajendran. Sep 82, 30p NAS 1.26:169358, UDR-TR-82-119, NASA-CR-169358
Contract NAG3-246

Crack initiation and propagation models for notches are examined. The Dowling crack initiation model and the E1 Haddad et al. crack propagation model were chosen for additional study. Existing data was used to make a preliminary evaluation of the crack propagation model. The results indicate that for the crack sizes in the test, the elastic parameter K gave good correlation for the crack growth rate data. Additional testing, directed specifically toward the problem of small cracks initiating and propagating from notches is necessary to make a full evaluation of these initiation and propagation models.

N82-33739/5 PC **A19**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Research in Structural and Solid Mechanics, 1982.
Research-in-Progress Reports.
J. M. Housner, and A. K. Noor. Oct 82, 427p NAS 1.55:2245, L-15506, NASA-CP-2245
Proc. Of Symp. On Advan. And Trends in Struct. And Solid Mech., Washington, D.C., 4-7 Oct. 1982; Sponsored in Cooperation with NSF, AFOSR, Onr, American Society of Civil Engineers and American Society of Mechanical Engineers.

No abstract available.

PB83-116269 PC **A03**/MF **A01**
Technische Hogeschool, Delft (Netherlands). Onderafdeling der Wiskunde en Informatica.
The Elastostatic Approach to Compression of a Cracked Medium with Dry Friction,
V. M. Rybka, and J. J. Kalker. 1982, 27p 82-22

In the frame of a linear elastic material, compression of a cracked plane is considered. Friction during a mutual sliding of the crack surfaces can be responsible for some non-linear effects, in particular, for hysteresis. A rigorous solution to the problem on non-axisymmetric compression of a space weakened by a circular crack with dry friction is given. This solution is obtained in displacements and the field of displacements is represented in elementary functions.

20L. Solid-State Physics

DE82005970 PC **A09**/MF **A01**
Illinois Univ. at Urbana-Champaign. Dept. of Physics.
Paramagnetic Resonance Studies of Crystals with Disorder.
D. G. Stinson. 1981, 195p DOE/ER/01198-1370
Contract AC02-76ER01198
Thesis.

Materials which are expected to display some of the properties intrinsic to amorphous insulators are examined using electron paramagnetic resonance techniques. Electron spin-lattice relaxation probes the dynamic structure of a material, and hence can be used to probe the Localized Tunneling States (LTS) believed to be responsible for the anomalous low temperature thermal properties of glasses. The crystal system lithium doped calcium oxide is known to have a paramagnetic center adjacent to a lithium substitutional impurity. This impurity may give rise to LTS similar to those observed in glasses. The electron spin-lattice relaxation rate of this center is measured as a function of temperature, frequency, crystal orientation, and nuclear spin state. The result cannot be explained using the conventional phonon theory of relaxation of color centers. A theory is developed which postulates that the center relaxes by mutual transitions of the electron spin and an adjacent LTS, coupled with the emission or absorption of a phonon. The electron spin- nuclear spin hyperfine interaction provides the coupling between the electron and the tunneling lithium. (ERA citation 07:055682)

PB83-854000 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Semiconductor and Optical Materials Characterization: Laser Applications. 1976-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1976-Nov 82.
Nov 82, 109p

This bibliography contains citations concerning laser technology applications in semiconductor and optical materials characterization. Laser measurement, sensing, monitoring, scanning, and annealing techniques are discussed. Crystallization probe, crystal defects, and characterizing semiconductor and optical fibre devices are considered. (Contains 81 citations fully indexed and including a title list.)

PB83-854794 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Exciton Phonon Interactions. 1975-November, 1982 (Citations from the International Information Service for the Physics and Engineering Communities Data Base).
Rept. for 1975-Nov 82.
Nov 82, 235p

This bibliography contains citations concerning solid state physics studies of exciton phonon interactions. The citations include studies of the spectral properties of these interactions in various crystals. Many of the studies are basic to the understanding of the behavior of materials used for semiconductors. Some of the studies of crystals include compounds of gallium, silicon, selenium, copper, potassium and cadmium, together with organic crystalline compounds of benzene, naphthalenes and other linear polyacene crystals. (Contains 208 citations fully indexed and including a title list.)

20N. Wave Propagation

N82-33592/8 PC **A05**/MF **A01**
Thayer School of Engineering, Hanover, NH.
A Two-Component Rain Model for the Prediction of Attenuation and Diversity Improvement.
Final Report.
R. K. Crane. Feb 82, 85p NAS 1.26:169198, NASA-CR-169198
Contract NASW-3506
Prepared for Environmental Research and Technology, Inc., Lexington, Mass.

A new model was developed to predict attenuation statistics for a single Earth-satellite or terrestrial propagation path. The model was extended to provide predictions of the joint occurrences of specified or higher attenuation values on two closely spaced Earth-satellite paths. The joint statistics provide the information required to obtain diversity gain or diversity advantage estimates. The new model is meteorologically based. It was tested against available Earth-satellite beacon observations and terrestrial path measurements. The model employs the rain climate region descriptions of the Global rain model. The rms deviation between the predicted and observed attenuation values for the terrestrial path data was 35 percent, a result consistent with the expectations of the Global model when the rain rate distribution for the path is not used in the calculation. Within the United States the rms deviation between measurement and prediction was 36 percent but worldwide it was 79 percent.

21. PROPULSION AND FUELS

21B. Combustion and Ignition

DE82003731 PC **A04**/MF **A01**
General Electric Co., Schenectady, NY. Energy Systems Programs Dept.
Long-Term Materials-Test Program: Quarterly Report, October-December 1980.
Sep 81, 65p DOE/ET/15457-179
Contract AC21-79ET15457
Portions of document are illegible.

The preponderance of the Long Term Materials Test Rig was installed during October, November, and December 1980. An account of the construction progress is given herein along with a pictorial description of the hardware. A parallel effort has been the preparation of the Qualification Test Plan, which will be used as the guide for the equipment checkout during the January to April 1981 period. A failure modes and effects analysis has also been conducted during this reporting period with the conclusion that the probability of a critical/hazardous failure is very small. The first three 250-hour tests on the erosion-corrosion simulator have shown that a small increase in the number of large particles (5% > 10 mu m) can greatly increase erosion. Similarly, a small velocity increase (1170 fps versus 960 fps) can accelerate erosion. The rig is proving to be a flexible tool in helping determine the limits of the parameters affecting erosion and corrosion. (ERA citation 07:049146)

DE82011211 PC **A04**/MF **A01**
Babcock and Wilcox Co., Alliance, OH. Research and Development Div.
Computational Tools for Pulverized-Coal Combustion. Third Quarterly Report, October 1981-December 1981.
W. J. Oberjohn, D. K. Cornelius, W. A. Fiveland, R. J. Schnipke, and J. H. Wang. Jan 82, 53p DOE/PC/40265-3, ARC-5265
Contract AC22-81PC40265
Portions of document are illegible.

This report summarizes the work conducted to develop and verify a computer code capable of modeling the major aspects of pulverized-coal combustion. Achieving this objective will lead to design methods applicable to industrial and utility furnaces. The combustion model (COMO) consists of a number of relatively independent modules that represent the major processes involved in pulverized-coal combustion. These modules will be continually upgraded over the course of the contract. Three distinct versions of the COMO will be developed over the duration of the contract. Version 1 of COMO will model all of the major features of pulverized-coal combustion but with a number of simplifying assumptions. It will be used primarily to determine a satisfactory means of integrating the numerical models of the combustion processes into an overall combustion model, since this is perhaps the major challenge. Later versions will relax these assumptions and incorporate state-of-the-art combustion information. Guidelines were prepared and reviewed to allow process modules to be developed relatively independently, while providing for the subsequent integration of these modules into COMO. The formulation and coding of the Version 1 gas-phase turbulence, chemistry and radiation models were completed. Test cases were run for each model, and good agreement was obtained with other analyses and with data when available. A formal method for documenting COMO was investigated, and preliminary specifications were developed. (ERA citation 07:045650)

N82-33827/8 PC **A05**/MF **A01**
Solar Turbines International, San Diego, CA.
Low NOx Heavy Fuel Combustor Concept Program.
Final Report.
D. J. White, R. T. Lecren, and A. P. Batakis. Nov 81, 93p NAS 1.26:165481, DOE/NASA/0145-1, NASA-CR-165481
Contracts DEN3-145, DE-AI01-77ET-13111

A total of twelve low NOx combustor configurations, embodying three different combustion concepts, were designed and fabricated as modular units. These configurations were evaluated experimentally for exhaust emission levels and for mechanical integrity. Emissions data were obtained in depth on two of the configurations.

PB83-117416 PC **A04**/MF **A01**
Science Applications, Inc., Chatsworth, CA. Combustion Science and Advanced Technology Dept.
Performance Modeling of Advanced Gas Burner Systems.
Annual rept. May 81-Jun 82,
P. T. Harsha, R. B. Edelman, R. C. Farmer, and T.-S. Wang. Jun 82, 70p SAI-82-041-CHA, GRI-82/0016
Contract GRI-5011-345-0100
See also PB81-217622.

Results of work in progress, carried out to provide expanded technology bases in support of the development of efficient and environmentally acceptable gas burning equipment, are reported. Specific areas include the development of semiglobal, quasiglobal and detailed chemical kinetic models for the description of the combustion of pure gases and gas mixtures, the application of plug flow and well-stirred reactor unit process models to the examination of chemical kinetics phenomena, the development of a laminar flat flame model and a laminar diffusion flame model for the analysis and interpretation of residential burner performance, and the development and application of a controlled mixing modular model for industrial combustors. Experimental work has also been initiated to aid in the development of a fundamental data base on performance and emissions characteristics of residential and commercial burners. Major accomplishments include the computation of mixture flame speeds as a function of fuel/air ratio for hydrocarbon mixtures representing natural gases and peak-shaving gases, which has led to an explanation of certain observed flashback phenomena, and an analysis of recent industrial burner experiments which explained observed trends in NO sub x emissions as a function of excess air and air preheat.

21C. Electric Propulsion

N82-33424/4 PC **A03**/MF **A01**
TRW Defense and Space Systems Group, Redondo Beach, CA.
Integrated Propulsion for Near-Earth Space Missions. Volume 1: Executive Summary.
Final Report, 29 Sep. 1980 - 29 Sep. 1981.
C. L. Dailey, H. F. Meissinger, R. H. Lovberg, and S. Zafran. Oct 81, 27p NAS 1.26:167889-V-1, TRW-37255-6001-UT-V-1, NASA-CR-167889-V-1
Contract NAS3-22661

Tradeoffs between electric propulsion system mass ratio and transfer time from LEO to GEO were conducted parametrically for various thruster efficiency, specific impulse, and other propulsion parameters. A computer model was developed for performing orbit transfer calculations which included the effects of aerodynamic drag, radiation degradation, and occultation. The tradeoff results showed that thruster technology areas for integrated propulsion should be directed towards improving primary thruster efficiency in the range from 1500 to 2500 seconds, and be continued towards reducing specific mass. Comparison of auxiliary propulsion systems showed large total propellant mass savings with integrated electric auxiliary propulsion. Stationkeeping is the most demanding on orbit propulsion requirement. At area densities above 0.5 sq m/kg, East-West stationkeeping requirements from solar pressure exceed North-South stationkeeping requirements from gravitational forces. A solar array pointing strategy was developed to minimize the effects of atmospheric drag at low altitude, enabling electric propulsion to initiate orbit transfer at Shuttle's maximum cargo carrying altitude. Gravity gradient torques are used during ascent to sustain the spacecraft roll motion required for optimum solar array illumination. A near optimum cover glass thickness of 6 mils was established for LEO to GEO transfer.

N82-33425/1 PC **A08**/MF **A01**
TRW Defense and Space Systems Group, Redondo Beach, CA.
Integrated Propulsion for Near-Earth Space Missions. Volume 2: Technical.
Final Report, 29 Sep. 1980 - 29 Sep. 1981.
C. L. Dailey, H. F. Meissinger, R. H. Lovberg, and S. Zafran. Oct 81, 173p NAS 1.26:167889-V-2, TRW-37255-6002-UT-V-2, NASA-CR-167889-V-2
Contract NAS3-22661

The calculation approach is described for parametric analysis of candidate electric propulsion systems employed in LEO to GEO missions. Occultation relations, atmospheric density effects, and natural radiation effects are presented. A solar cell cover glass tradeoff is performed to determine optimum glass thickness. Solar array and spacecraft pointing strategies are described for low altitude flight and for optimum array illumination during ascent. Mass ratio tradeoffs versus transfer time provide direction for thruster technology improvements. Integrated electric propulsion analysis is performed for orbit boosting, inclination change, attitude control, stationkeeping, repositioning, and disposal functions as well as power sharing with payload on orbit. Comparison with chemical auxiliary propulsion is made to quantify the advantages of integrated propulsion in terms of weight savings and concomittant launch cost savings.

21D. Fuels

DE82007974 PC **A04**/MF **A01**
Department of Energy, Washington, DC. Div. of Coal Conversion.
Coal Power and Combustion. Quarterly Report, April-September 1977.
Apr 78, 71p DOE/ET-0025/3
Portions of document are illegible.

The Office of Fossil Energy of the Energy Research and Development Administration (ERDA) is conducting a research and development program to provide technology that will permit rapid commercialization of processes for improved direct combustion of coal, for advanced coal-burning power equipment, and for converting coal to synthetic fuels. These fuels must be suitable for power generation, transportation, storage, and residential and industrial uses. The technologies selected for development - gasification, liquefaction, combustion, and advanced power systems - satisfy an urgent need for a particular type of fuel, are potentially feasible both technically and economically (in terms of the costs of research and development and the final product), and will not exceed air, water, and solid pollution standards established by the Environmental Protection Agency (EPA). The emphasis given each technology varies, depending on such things as technical complexity, development stage (laboratory research, including bench-scale tests and experiments with process development units, and pilot plant design, construction, and operaton), variety of uses for the fuel produced, and urgency of the need that the technology is designed to satisfy. Twenty-one individual projects are described under the following headings: contract number, funding, program description, progress in current quarters, etc. (ERA citation 07:049143)

DE82008178 PC **A03**/MF **A01**
Cv International, Inc., Torrance, CA.
LNG Release-Prevention Demonstration Program: Stress-Analysis Report.
26 Feb 82, 30p DOE/EV/10448-T1
Contract AC01-81EV10448

The results of an analysis performed to determine the thermal transient stress in a coaxial pipe joint during cooldown are presented. Liquid nitrogen was used as a cooling agent in a test setup. The temperature-time history for the inner and outer pipes was determined at various coolant flow rates. These temperatures are analyzed to determine the condition at which maximum stress occurs. The maximum stress occurs in the inner pipe adjacent to the upstream corner of the spoke. The cooldown method which produces lowest stress is to use a flow vapor in the annulus. This provides a practical cooldown rate while maintaining a low level of stress. (ERA citation 07:057758)

DE82008476 PC **A05**/MF **A01**
Department of Energy, Washington, DC. Energy Information Administration.
US Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 1980 Annual Report.
Oct 81, 96p DOE/EIA-0216(80)
Portions of document are illegible.

Estimates of US proven reserves of crude oil, natural gas liquids, and dry natural gas are presented. Additional data on drilling, ownership, indicated additional crude oil reserves, nonproducing proved reserves, and commitment status of proved natural gas reserves were also collected. These data are presented and discussed in this report. Estimates are based on analysis of data filed by 2130 operators of oil and gas wells on form EIA-23. (ERA citation 07:049168)

DE82011317 PC **A06**/MF **A01**
Department of Energy, Washington, DC. Energy Research Advisory Board.
Biomass Energy. Report of the Energy Research Advisory Board Panel on Biomass.
Nov 81, 119p DOE/NBM-2011317
Portions of document are illegible.

The energetics and economics of biomass use, and possible impacts on agriculture, forestry, land use, environment, and society are analyzed. The complex questions that relate to the many biomass sources and the numerous energy conversion technologies are identified. Attention is given to the research needed to develop biomass sources and improve conversion technologies to maximize the net additional energy available from biomass. (ERA citation 07:046204)

DE82011976 PC **A02**/MF **A01**
Los Alamos National Lab., NM.
Two Bismuth Sulfate-Sulfuric Acid Hybrid Water-Splitting Cycles. Proposed Antimonyl Sulfate Cycle.
W. M. Jones. 1982, 9p LA-UR-82-583, CONF-820605-13
Contract W-7405-ENG-36
World hydrogen energy conference, Pasadena, CA, USA, 13 Jun 1982, Portions of document are illegible.

Some experimental work is presented that is related to two hybrid thermochemical cycles for the production of hydrogen which involve bismuth trisulfate and/or bismuth oxysulfates. Omitting statement of the steps for decomposition of SO sub 3 and the electrochemical formation of H sub 2 and H sub 2 SO sub 4 from SO sub 2 and H sub 2 O, the high and low temperature reactions are: Cycle I - Bi sub 2 (SO sub 4) sub 3 = Bi sub 2 O sub 2 sub 3 (SO sub 4) sub 0 sub 7 + 2.3 SO sub 3 ; and Bi sub 2 O sub 2 sub 3 (SO sub 4) sub 0 sub 7 + 2.3 H sub 2 SO sub 4 = Bi sub 2 (SO sub 4) sub 3 + 2.3 H sub 2 O. Cycle II - Bi sub 2 O(SO sub 4) sub 2 = Bi sub 2 O sub 2 sub 3 (SO sub 4) sub 0 sub 7 + 1.3 SO sub 3 ; and Bi sub 2 O sub 2 sub 3 (SO sub 4) sub 0 sub 7 + 1.3 H sub 2 SO sub 4 = Bi sub 2 O(SO sub 4) sub 2 + 1.3 H sub 2 O. Equilibrium sulfur trioxide pressures are given graphically for three solid-gas equilibria involving Bi sub 2 (SO sub 4) sub 3 , alpha - and beta -Bi sub 2 O(SO sub 4) sub 2 , and Bi sub 2 O sub 2 SO sub 4 . An improved method of carrying out the low temperature step for Cycle I is presented which may provide a remedy to a problem of sorption of sulfuric acid solution by the solids. An antimonyl sulfate - sulfuric acid hybrid cycle is outlined in which SO sub 2 and O sub 2 are evolved at different temperatures, simplifying the usual SO sub 3 -SO sub 2 -O sub 2 separation problem. (ERA citation 07:046083)

DE82012346 PC **A02**/MF **A01**
Sandia National Labs., Albuquerque, NM.
Sandia/Geokinetics Retort 23: A Horizontal in-Situ Retorting Experiment.
C. E. Tyner, R. L. Parrish, B. H. Major, and J. M. Lekas. 1982, 15p SAND-82-0139C, CONF-820441-4
Contract AC04-76DP00789
15. oil shale symposium, Golden, CO, USA, 27 Apr 1982, Portions of document are illegible.

Sandia National Laboratories and Geokinetics, Inc., have recently completed processing of a 6000 tonne horizontal in situ oil shale retort near Vernal, Utah. The heavily-instrumented, explosively-fractured oil shale bed, containing 12% void, was combustion retorted

using a number of distinct operating conditions, including air at high and low flow rates and air plus 30% combusted recycle gas. A number of techniques were used to evaluate the effectiveness of these various processing modes. The extensive suite of thermal instrumentation, for example, allowed continuous monitoring of the steam and retorting fronts and estimation of oil coking losses (from heating rate data) and total shale retorted. Actual sweep efficiency, based upon these data, was 79%; sweep efficiency estimates from steam front data were nearly identical, both in total shale contacted and spatial distribution of the swept zone. The thermal data also provided a direct means of assessing the validity of a number of retort diagnostic techniques based on fluid product (offgas and oil) analyses. Offgas material balance calculation estimates of sweep efficiency, for example, were 77% while retorting efficiency was 58% of Fischer Assay, with a 27% oil loss to combustion and a 15% loss to coking. Oil loss estimates based on oil analyses were similar. The experiment demonstrated that true in situ retorting of thin-seam rubbled shale beds with low void volume is practical using horizontal burn techniques, and that existing retort diagnostics are capable of providing a detailed analysis of the process. (ERA citation 07:052759)

DE82012831 PC **A04**/MF **A01**
Alabama Univ., University. School of Mines and Energy Development.
Utilizing the Unconventional Gas Resources of the Pottsville Formation Coals in Tuscaloosa County, Alabama.
Sep 81, 65p DOE/R4/10333-T1
Contract FG44-80R410333

The University of Alabama, with a grant from the Department of Energy, has completed a feasibility study for coalbed methane development on campus. A wireline corehole was drilled to a depth of 2965 feet and core was recovered continuously from the top of the Pottsville Formation. Over 33 lineal feet of coal was recovered of which 31 feet were subjected to desorption analysis. Coal samples were desorbd of gas according to standard US Bureau of Mines techniques for estimating gas content. Coal thickness and gas content data were used to calculate gas resources. The total resource present is nearly 10 billion cubic feet beneath the 760-acre campus. The Mary Lee coal group along contains more than 3.4 billion cubic feet of gas at 75% recovery. Within the context of the government and industrial experience and given the resource base, projected gas production rates, capital requirements and operating costs, standard techniques of economic analyses indicate that development of University property is feasible but requires careful planning and execution. (ERA citation 07:049128)

N82-33697/5 PC **A03**/MF **A01**
Lockheed Missiles and Space Co., Inc., Huntsville, AL.
Study of Laser Heated Propulsion Devices. Part 2: Assessment of Laser Propulsion Modeling and Simulation Requirements.
Final Report.
J. Thoenes. Apr 82, 41p NAS 1.26:170626, LMSC-HREC-TR-D784744-PT-2, NASA-CR-170626
Contract NAS8-33974

Theoretical models for the laser heated thruster are reviewed. The requirements for an improved laser heated thruster theoretical model are discussed. The application of a time dependent finite difference Navier-Stokes equation solution to the laser heated thruster problem is described, along with a simple closed form solution which was developed in order to gain insight into the difficulties encountered in the pursuit of the numerical solution.

PB83-116822 PC **A03**/MF **A01**
Environmental Protection Agency, Ann Arbor, MI. Standards Development and Support Branch.
Distribution of Methanol as a Transportation Fuel.
Technical rept.,
R. Dwight Atkinson. Jun 82, 46p EPA-AA-SDSB-82-13

This report examines the issues surrounding the distribution of synthetic motor fuels, especially methanol. Four basic issues are discussed: (1) an overview of the existing transportation fuel distribution network including historical trends and crude oil pipeline networks and capacities (2) the technical problems in transporting methanol (3) economic costs of long-range, local, and retail distribution and (4) the total distribution capacity needed to support a viable synduel industry. In conclusion, the total capital costs for synthetic motor fuel distribution is given and compared to the capital cost requirements for synfuel production facilities.

PB83-119503 PC **A12**/MF **A01**
New York City Dept. of Sanitation.
Feasibility Study for Resource Recovery: Southwest Brooklyn Incinerator.
Final rept.,
Warren H. Chesner, Michael A. Barbara, Karl J. Danz, Earl O. Smith, and Kermit E. Trout. Sep 82, 258p NBS-GCR-82-409
Contract NB81-NADA-2043
Prepared in cooperation with WESTON Designers-Consultants, Roslyn, NY., and Black and Veatch Consulting Engineers, Kansas City, MO.

The primary purpose of this investigation was to examine both the technical and economic feasibility of exploiting the heating value of the refuse and the material value of the incinerator ash processed at the Southwest Brooklyn Incinerator. Based on the results of field testing, the combustion of municipal refuse at Southwest Brooklyn would be capable of generating 2.2 trillion Btu of energy annually. A detailed review of potential corrosion problems, and mitigating measures, as well as the expected waste heat boiler operational life, was undertaken to determine process modifications and equipment requirements to minimize the impact of corrosion on heat recovery operation. A market survey of potential energy users within a three-quarter mile radius of the incinerator was implemented to determine the available steam market.

PB83-119511 PC **A05**/MF **A01**
Bureau of Mines, Amarillo, TX. Helium Field Operations.
Analyses of Natural Gases, 1981.
Information circular/1982,
Richard D. Miller, and Floyd R. Hertweck, Jr. Sep 82, 90p BUMINES-IC-8890
See also PB82-196593. Library of Congress catalog card no. 82-600210.

This Bureau of Mines publication contains analyses and related source data for 224 natural gas samples from 18 States. Of the total, 191 samples were collected during calendar year 1981. The remaining 33 samples were collected during previous years, but releases granting permission to publish were not received until 1981. All samples were obtained and analyzed as part of Bureau of Mines investigations of the occurrences of helium in natural gases of countries with free market economies. This survey has been conducted since 1917. The analyses published herein were made by the mass spectrometer and special helium apparatus described previously.

PB83-122879 PC **A03**/MF **A01**
General Accounting Office, Washington, DC. Resources Community Economic Div.
Status of Strategic Petroleum Reserve Activities as of September 30, 1982.
15 Oct 82, 34p GAO/RCED-83-29, B-208196
See also AD-A108 530.

During fiscal year 1982, about 78.6 million barrels of oil were delivered to the Strategic Petroleum Reserve, for an annual average fill rate of about 215,300 barrels per day. As of September 30, 1982, the Department of Energy reported that the Reserve contained about 277.9 million barrels. This report discusses a number of significant events, which occurred during the fourth quarter of fiscal year 1982, that affect the Reserve. It also discusses the progress being made in developing additional storage capacity for the Reserve.

PB83-126011 PC **A04**/MF **A01**
Energy and Minerals Research Co., Exton, PA.
Leak Response Gelling of Liquefied Natural Gas (LNG).
Final rept. Jan-Oct 81,
W. B. Tarpley, Jr., E. N. Twesme, and J. R. Zatko. Mar 81, 56p GRI-80/0098
Contract GRI-5080-352-0372

Techniques for thixotropic gelling of liquefied natural gas (LNG) in response to leak or rupture in an LNG container were examined, and the hazard-reducing potential of the technique was demonstrated by limiting mobility and reducing evaporation and burning rate. Of 30 candidate gelants for liquefied methane evaluated, gels of highest yield stress and lowest evaporation rate were obtained with carbon blacks and pyrogenic silica, and means were investigated for reducing the volume requirements of these low bulk-density materials; these included the addition of a surfactant, gelant concentration in a liquid carrier at least partially soluble in methane, and pelletization. All of these techniques showed promise, and pelletization of the low-density gelants reduced required gelant volume to 11 percent of the undensified volume. High-shear mixing of the densified gelants as well as of high-density gelants such as bentonite clay into a methane homolog at room temperature improved the speed of gelation. Other dispersion techniques were investigated. It is recommended that future research optimize gelling and dispersion techniques for industry use and develop hardware designs for long-term gelant storage and rapid introduction in the event of spillage.

PB83-126029 PC **A05**/MF **A01**
Factory Mutual Research Corp., Norwood, MA.
Dispersal of LNG Vapor Clouds with Water Spray Curtains.
Annual rept. on Phase 1 (Final) Dec 80-Dec 81,
Robert G. Zalosh, Ronald L. Alpert, and Gunnar Heskestad. Aug 82, 96p GRI-80/0107
Contract GRI-5080-352-0386

Factory Mutual Research Corporation has embarked on a three-phase research program to develop engineering design guidelines for the use of water spray curtains to disperse liquefied natural gas vapor clouds. This report presents results obtained in Phase 1 - Theoretical Analysis and Design of Small-Scale Experiments. Calculations with a two-dimensional elliptic code (SPRAY) show that vapor dilution by a water spray is substantial at low wind speeds, but decreases markedly at wind speeds of about 4 m/s and higher. Calculated ratios of LNG vapor concentration leaving to that entering a downward facing spray curtain have been correlated as a function of the ratio of vapor cloud momentum to water flow momentum. At low wind speeds, i.e., small cloud/water momentum ratios, spray heating of the cold vapor cloud renders the cloud buoyant and significantly reduces the downwind ground-level LNG concentrations. For Phase 2 of the project, a comprehensive plan has been designed for reduced-scale model studies in a wind tunnel and for small outdoor spill experiments.

PB83-126078 PC **A06**/MF **A01**
General Electric Co., King of Prussia, PA. Advanced Energy Programs Dept.
Marine Biomass: New York State Site and Species Study Compositional Analysis and Systems Studies.
Final rept. Mar-Dec 81,
R. W. Makinen, K. M. Farley, and W. R. Kugler. 26 Feb 82, 119p GRI-81/0096
Contract GRI-5081-323-0418

The primary objective of the Marine Biomass Programs is to provide an optimized, integrated process for producing methane from seaweeds cultivated in the open ocean and to do so at a price which is competitive with that of methane from other sources. The New York State Site and Species Study represents the first evaluation of a site outside of Southern California.

PB83-126094 PC **A13**/MF **A01**
Office of Technology Assessment, Washington, DC.
Increased Automobile Fuel Efficiency and Synthetic Fuels: Alternatives for Reducing Oil Imports.
Sep 82, 297p OTA-E-185

This study assesses and compares increased automobile fuel efficiency and synthetic fuels production with respect to their potential to reduce conventional oil consumption, and their costs and impacts. Conservation and fuel switching as a means of reducing stationary oil uses are also considered, but in considerably less detail, in order to enable estimates of plausible future oil imports.

PB83-126268 PC **A03**/MF **A01**
Texas Engineering Experiment Station, College Station.
Basic Research Opportunities for Lasting Fuel Gas Supplies from Inorganic Resources.
Administrative rept.,
Susan Adams, and S. R. Baen. 1 Oct 82, 46p GRI-82/0020
Contract GRI-5081-360-0435
See also PB82-231671.

Twenty-six participants (twenty-five faculty members from U.S. universities and one private consultant) reviewed the status of current research problems relating to the production of fuel gases from inorganic resources using indefinitely sustainable energy sources during a workshop held during the period June 8 to August 14, 1981 at Texas A&M University, College Station, Texas. Photobiological, biomimetic, photochemical, photoelectrochemical, radiolytic and thermochemical pathways leading to the generation of hydrogen from water and hydrogen sulfide, of carbon monoxide and methane from carbon dioxide, and of nitrogen-based fuel gases from atomspheric nitrogen were assessed. Principal recommendations for conducting similar workshops included that: (a) participants need thorough preparation before the workshop commences, including literature searches, and (b) the workshop must adhere to a firm production schedule. The workshop setting did promote rapid assimilation and 'cross-pollination' of massive amounts of data, and produced a significant aggregation of information as a draft final report. Extensive post-workshop editing was required to produce an unified and usable report.

PB83-128439
(Order as PB83-128181, PC **A24**/MF **A01**)
Spaite (Paul W.) Co., Cincinnati, OH.
Methanol as a Clean Major Fuel,
Paul W. Spaite. Sep 82, 26p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p440-465 Oct 81.

No abstract available.

PB83-128447
(Order as PB83-128181, PC **A24**/MF **A01**)
Environmental Protection Agency, Ann Arbor, MI. Emission Control Technology Div.
Methanol as an Alternative Transportation Fuel,
Richard Rykowski, Dwight Atkinson, Daniel Heiser, John McGuckin, and David Pletcher. Sep 82, 23p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p466-488 Oct 81.

No abstract available.

PB83-128454
(Order as PB83-128181, PC **A24**/MF **A01**)
TRW, Inc., Redondo Beach, CA.
A Compendium of Synfuel End Use Testing Programs,
Masood Ghassemi, Sandra Quinlivan, and Michael Haro. Sep 82, 20p
Included in Proceedings of Symposium on Environmental Aspects of Fuel Conversion Technology - VI: A Symposium on Coal-Based Synfuels, p489-508 Oct 81.

No abstract available.

PB83-129130 PC **A12**/MF **A01**
Indian Inst. of Tech., Bombay.
Lubricants Additives Waxes and Petroleum Specialty Products (2nd LAWPSP Symposium Number 2 Volume 2, January 4-5, 1981).
1981, 251p

This volume contains 26 papers presented in 4 technical sessions (1) Lubricants (2) Lubricants and Speciality Products (3) Additives and (4) Waxes.

PB83-129452 PC **A06**/MF **A01**
Indian Chemical Manufacturers Association, Bombay.
Speciality Chemicals in the Oil Industry (Proceedings on the Lecture Series Held at Bombay, 10th December 1981.)
Dec 81, 115p

The main theme of this lecture series was to discuss the role of the Chemical Industry on the various phases of oil production, in India's present drive to reduce dependence on imports. The papers presented and discussed were on: Drilling Mud Chemicals; Oil Well Cement & Cement Additives; Pumping of High Waxy Crudes - Role of Flow Improvers and Wax Inhibitors with special Reference to Bombay High Crude Oil; De-emulsifiers and Emulsifiers for Production of Crude Petroleum; Chemicals for Tertiary Recovery of Crude Oil - Surfactant; and use of Polymers in Enhanced Oil Recovery.

PB83-854067 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Biomass Conversion. June, 1970-November, 1982 (Citations from the Engineering Index Data Base).
Rept. for Jun 70-Nov 82.
Nov 82, 101p
Supersedes PB82-860206.

Citations in this bibliography cover techniques and technology for biomass conversion from organic wastes into gaseous and liquid fuels or energy sources. Some attention is given to chemical reactions in bioconversion. (This updated bibliography contains 98 citations, 19 of which are new entries to the previous edition.)

PB83-854075 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Liquefied Petroleum Gas. June, 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for Jun 76-Nov 82.
Nov 82, 120p
Supersedes PB80-853302.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning storage, transportation, and uses of liquefied petroleum gas. Production methods, safety factors and marketing demands also are considered. Standard methods for testing the composition of liquefied petroleum gases are included. (This updated bibliography contains 112 citations, 51 of which are new entries to the previous edition.)

PB83-854232 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Purox Pyrolysis Process. 1976-November, 1982 (Citations from the Energy Data Base).
Rept. for 1976-Nov 82.
Nov 82, 93p
Supersedes PB82-859521.Prepared in cooperation with the Department of Energy, Washington, DC.

This bibliography contains citations concerning descriptions, evaluations, and general and specific applications of the pollution-free purox pyrolysis process for deriving fuels and chemicals from municipal, industrial, and agricultural wastes. Some consideration is given to the environmental benefits of this process as well as to the energy benefits. (This updated bibliography contains 84 citations, 17 of which are new entries to the previous edition.)

21E. Jet and Gas Turbine Engines

N82-33389/9 PC **A05**/MF **A01**
National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
Rotor Tip Clearance Effects on Overall and Blade-Element Performance of Axial-Flow Transonic Fan Stage.
R. D. Moore. Sep 82, 87p NAS 1.60:2049, E-559, NASA-TP-2049

The effects of tip clearance on the overall and blade-element performance of an axial-flow transonic fan stage are presented. The 50-centimeter-diameter fan was tested at four tip clearances (nonrotating) from 0.061 to 0.178 centimeter. The calculated radial growth of the blades was 0.040 centimeter at design conditions. The decrease in overall stage performance with increasing clearance is attributed to the loss in rotor performance. For the rotor the effects of clearance on performance parameters extended to about 70 percent of blade span from the tip. The stage still margin based on an assumed operating line decreased from 15.3 to 0 percent as the clearance increased from 0.061 to 0.178 centimeter.

N82-33390/7 PC **A11**/MF **A01**
Akron Univ., OH.
Engine Dynamic Analysis with General Nonlinear Finite Element Codes. Part 2: Bearing Element Implementation Overall Numerical Characteristics and Benchmaking.
J. Padovan, M. Adams, J. Fertis, I. Zeid, and P. Lam. Oct 82, 229p NAS 1.26:167944, NASA-CR-167944
Grant NSG-3283

Finite element codes are used in modeling rotor-bearing-stator structure common to the turbine industry. Engine dynamic simulation is used by developing strategies which enable the use of available finite element codes. benchmarking the elements developed are benchmarked by incorporation into a general purpose code (ADINA); the numerical characteristics of finite element type rotor-bearing-stator simulations are evaluated through the use of various types of explicit/implicit numerical integration operators. Improving the overall numerical efficiency of the procedure is improved.

N82-33391/5 PC **A16**/MF **A01**
Pratt and Whitney Aircraft Group, East Hartford, CT.
Structural Tailoring of Engine Blades (Staebl).
Interim Report.
C. E. Platt, T. K. Pratt, and K. W. Brown. Jun 82, 359p NAS 1.26:167949, PWA-5774-21, NASA-CR-167949
Contract NAS3-22525

A mathematical optimization procedure was developed for the structural tailoring of engine blades and was used to structurally tailor two engine fan blades constructed of composite materials without midspan shrouds. The first was a solid blade made from superhybrid composites, and the second was a hollow blade with metal matrix composite inlays. Three major computerized functions were needed to complete the procedure: approximate analysis with the established input variables, optimization of an objective function, and refined analysis for design verification.

N82-33393/1 PC **A08**/MF **A01**
General Electric Co., Cincinnati, OH. Aircraft Engine Business Group.
The CF6 Jet Engine Performance Improvement: Low Pressure Turbine Active Clearance Control.
B. D. Beck, and W. A. Fasching. Jun 82, 159p NAS 1.26:165557, R82AEB462, NASA-CR-165557
Contract NAS3-20629

A low pressure turbine (LPT) active clearance control (ACC) cooling system was developed to reduce the fuel consumption of current CF6-50 turbofan engines for wide bodied commercial aircraft. The program performance improvement goal of 0.3% delta sfc was determined to be achievable with an improved impingement cooling system. The technology enables the design of an optimized manifold and piping system which is capable of a performance gain of 0.45% delta sfc.

N82-33394/9 PC **A06**/MF **A01**
Pratt and Whitney Aircraft Group, East Hartford, CT.
Energy Efficient Engine: Turbine Transition Duct Model Technology Report.
K. Leach, and R. Thurlin. Aug 82, 113p NAS 1.26:167996, PWA-5594-215, NASA-CR-167996
Contract NAS3-20646

The Low-Pressure Turbine Transition Duct Model Technology Program was directed toward substantiating the aerodynamic definition of a turbine transition duct for the Energy Efficient Engine. This effort was successful in demonstrating an aerodynamically viable compact duct geometry and the performance benefits associated with a low camber low-pressure turbine inlet guide vane. The transition duct design for the flight propulsion system was tested and the pressure loss goal of 0.7 percent was verified. Also, strut fairing pressure distributions, as well as wall pressure coefficients, were in close agreement with analytical predictions. Duct modifications for the integrated core/low spool were also evaluated. The total pressure loss was 1.59 percent. Although the increase in exit area in this design produced higher wall loadings, reflecting a more aggressive aerodynamic design, pressure profiles showed no evidence of flow separation. Overall, the results acquired have provided pertinent design and diagnostic information for the design of a turbine transition duct for both the flight propulsion system and the integrated core/low spool.

Field 21—PROPULSION AND FUELS

Group 21E—Jet and Gas Turbine Engines

N82-33661/1 PC **A03**/MF **A01**
Cambridge Univ. (England). Dept. of Engineering.
Flow Phenomena in Compressor Casing Treatment.
G. D. J. Smith, and N. A. Cumpsty. 1982, 38p
CUED/A-TURBO/TR-112, ISSN-0309-6521

An axial skewed slot casing treatment was tested over the tips of an isolated low speed rotor with a hub-tip ratio of 0.4. An improvement in stall margin of 22% at nominal clearance was obtained. Detailed measurements of the loss pattern downstream of the rotor were made with a hot wire. Measurements were also made in the blade passage with a traversing gear moving with the rotor and in the treatment slots themselves using hot wires. The tentative conclusion is that unsteady effects in the slot are of secondary importance. Of primary importance is the selective removal of high absolute swirl, high loss fluid from the end wall near the trailing edge of the pressure surface of the blade and reintroduction of this, with absolute swirl direction reversed, near the blade leading edge.

N82-34190/0 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Circumferentially Segmented Duct Lines Optimized for Axisymmetric and Standing Wave Sources.
W. R. Watson. 1982, 50p NAS 1.60:2075, L-15316, NASA-TP-2075

Optimum and off-optimum properties of circumferentially segmented duct liners are compared with those of uniform liners to identify any potential benefits of circumferentially segmented liners. High- and low-order spinning-mode sources are considered in the study. The solution for the segmented liner is obtained by a multimodal expansion of the segmented-liner eigenmodes in terms of a series of hardwall duct models. The coefficients in the hard-wall series are obtained by using Galerkin's method. Results show that for some frequencies and duct lengths, circumferentially segmented liners scatter energy equally between a higher and lower order circumferential wave number. Studies for higher order spinning-mode sources show that an optimized segmented liner with a hard-wall/soft-wal admittance variation representing an optimum configuration gives better performance than an optimized uniform liner. Overall, the greatest benefit of the segmented liner over the uniform liner occurs under off-optimum conditions. The optimized segmented liner gives more effective broadband performance than the optimized uniform liner.

N82-34191/8 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Simulation of the Fluctuating Field of a Forced Jet.
A. Bayliss, L. Maestrello, and E. Turkel. Aug 82, 15p NAS 1.15:84506, NASA-TM-84506
Contracts NAS1-14472, NAS1-16934

The fluctuating field of a jet excited by transient mass injection is simulated numerically. The model is developed by expanding the state vector as a mean state plus a fluctuating state. Nonlinear terms are not neglected and the effect of nonlinearity is studied. The results show a significant spectral broadening in the flow field due to the nonlinearity. In addition, large scale structures are broken down into smaller scales.

PATENT-4 338 783 Not available NTIS
Department of the Air Force, Washington, DC.
Two-Stage Hypersonic Ramjet.
Patent,
John L. Leingang. Filed 4 Sep 75, patented 13 Jul 82, 10p AD-D009 736/0, PAT-APPL-610 513
Supersedes PAT-APPL-610 513-75.
Availability: This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $1.00.

The patent describes a two-stage ramjet engine including an aft end, ejectable, boost-stage-combustor/nozzle assembly for initially accelerating from low-to-mid-supersonic launching speeds to high supersonic speeds. It is mounted in a tandem arrangement immediately aft of a separate, forward end-cruise stage-combustor/nozzle assembly positioned directly behind an inlet-diffuser section for subsequently further accelerating from high supersonic to hypersonic speeds after ejecting the entire boost stage.

PB83-800961 PC **N01**/MF **N01**
National Technical Information Service, Springfield, VA.
Cavitation: Cavitation Flow and Erosion in Turbines. 1964-October, 1982 (Citations from the NTIS Data Base).
Nov 82, 110p
Supersedes PB81-808396 and PB80-810591.

The cavitation flow characteristics and erosion processes involving turbopumps, turbine blades, and steam turbines are documented. Steam, liquid, and drop flow are investigated. Test facilities and methods are described, as well as statistical and theoretical information. The applications include rocket engines, cryopumps, and other hydraulic turbines. (This updated bibliography contains 102 citations, 2 of which are new entries to the previous edition.)

21G. Reciprocating Engines

N82-33392/3 PC **A04**/MF **A01**
Teledyne Continental Motors, Mobile, AL. Aircraft Products Div.
Exhaust Emissions Reduction for Intermittent Combustion Aircraft Engines.
Final Report.
B. J. Rezy, K. J. Stuckas, J. R. Tucker, and J. E. Meyers. May 82, 55p NAS 1.26:167914, NASA-CR-167914
Contract NAS3-19755

Three concepts which, to an aircraft piston engine, provide reductions in exhaust emissions of hydrocarbons and carbon monoxide while simultaneously improving fuel economy. The three chosen concepts, (1) an improved fuel injection system, (2) an improved cooling cylinder head, and (3) exhaust air injection, when combined, show a synergistic relationship in achieving these goals. In addition, the benefits of variable ignition timing were explored and both dynamometer and flight testing of the final engine configuration were accomplished.

N82-33841/9 PC **A02**/MF **A01**
Copenhagen Univ. (Denmark). Fysisk Lab. II.
Optimal Staging of Endoreversible Heat Engines.
M. H. Rubin, and B. Andresen. 1980, 25p DE82-900742, KU-HCOE-FL2-R-80-10

Two endoversible engines were put in series to form a single engine, whose power output is maximized. The interface between the two stages, which for the present model is the intermediate temperature and the relative timing of the two engines, is arbitrary and can be used to satisfy other, nonthermodynamic constraints. Adding any constraint on the volume of the working gas does not lift this indeterminacy. The optimum composite system is equivalent to a single endoreversible engine.

N82-34311/2 PC **A99**/MF **A01**
Mechanical Technology, Inc., Latham, NY.
Automotive Stirling Engine MOD 1 Design Review, Volume 1.
Final Report.
Aug 82, 654p NAS 1.26:167935, DOE/NASA/0032-16-V-1, NASA-CR-167935
Contracts DEN3-32, DE-AI01-77CS-51040
Presented at Automotive Stirling Engine (Ase) MOD 1 Engine Design Review, Cleveland, 22-23 May 1980.

Risk assessment, safety analysis of the automotive stirling engine (ASE) mod I, design criteria and materials properties for the ASE mod I and reference engines, combustion are flower development, and the mod I engine starter motor are discussed. The stirling engine system, external heat system, hot engine system, cold engine system, and engine drive system are also discussed.

N82-34312/0 PC **A16**/MF **A01**
Mechanical Technology, Inc., Latham, NY.
Automotive Stirling Engine MOD 1 Design Review, Volume 3.
Final Report.
Aug 82, 362p NAS 1.26:167937, DOE/NASA/0032-18-V-3, NASA-CR-167397
Contracts DEN3-32, DE-AI01-77CS-51040
Review Held in Cleveland, 22-23 May 1980.

Engineering drawings for the stirling engine, external heat, hot and cold engine, engine drive, and control systems and auxiliaries are provided. Vehicle integration is also illustrated.

22.

SPACE TECHNOLOGY

22A. Astronautics

N82-33411/1 PC **A04**/MF **A01**
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center.
Spacelab Mission 2: Experimental Descriptions.
K. S. Clifton. Jan 82, 64p NAS 1.15:82477, NASA-TM-82477

The second Spacelab Mission and the 12 multidisciplineary experiments selected to fly on board are described. These experiments include the following: vitamin D metabolities and bone demineralization; interaction of oxygen and gravity influenced lignification; ejectable plasma diagnostics package; plasma depletion experiments for ionospheric and radio astronomical studies; small helium cooled IR telescope; elemental composition and energy spectra of cosmic ray nuclei; hard X-ray imaging of clusters of galaxies and other extended X-ray sources; solar magnetic and velocity field measurement system; solar coronal helium abundance Spacelab experiment; solar UV high resolution telescope and spectroraph; solar UV spectral irradiance monitor; and properties of superfluid helium in zero-G.

N82-33417/8 PC **A03**/MF **A01**
National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center.
Atmospheric Constraint Statistics for the Space Shuttle Mission Planning.
O. E. Smith, G. W. Batts, and J. A. Willett. Aug 82, 39p NAS 1.60:2069, NASA-TP-2069

The procedures used to establish statistics of atmospheric constraints of interest to the Space Shuttle mission planning are presented. The statistics considered are for the frequency of occurrence, runs, and time conditional probabilities of several atmospheric constrants for each of the Space Shuttle mission phases. The mission phases considered are (1) prelaunch, (2) lanch, (3) return to launch site, (4) abort once around landing, and (5) end of mission landing.

N82-33420/2 PC **A07**/MF **A01**
Itek Corp., Lexington, MA. Optical Systems Div.
Feasibility Evaluation and Study of Adapting the Attitude Reference System to the Orbiter Camera Payload System's Large Format Camera.
Final Report.
31 Mar 82, 165p NAS 1.26:167629, ITEK-82-8466.1, NASA-CR-167629
Contract NAS9-16562

A design concept that will implement a mapping capability for the Orbital Camera Payload System (OCPS) when ground control points are not available is discussed. Through the use of stellar imagery collected by a pair of cameras whose optical axis are structurally related to the large format camera optical axis, such pointing information is made available.

N82-33421/0 PC **A05**/MF **A01**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.

Illumination from Space with Orbiting Solar-Reflector Spacecraft.
J. E. Canady, Jr., and J. L. Allen, Jr.. Sep 82, 90p NAS 1.60:2065, L-15127, NASA-TP-2065

The feasibility of using orbiting mirrors to reflect sunlight to Earth for several illumination applications is studied. A constellation of sixteen 1 km solar reflector spacecraft in geosynchronous orbit can illuminate a region 333 km in diameter to 8 lux, which is brighter than most existing expressway lighting systems. This constellation can serve one region all night long or can provide illumination during mornings and evenings to five regions across the United States. Preliminary cost estimates indicate such an endeavor is economically feasible. The studies also explain how two solar reflectors can illuminate the in-orbit nighttime operations of Space Shuttle. An unfurlable, 1 km diameter solar reflector spacecraft design concept was derived. This spacecraft can be packaged in the Space, Shuttle, transported to low Earth orbit, unfurled, and solar sailed to operational orbits up to geosunchronous. The necessary technical studies and improvements in technology are described, and potential environmental concerns are discussed.

N82-33422/8 PC **A03**/MF **A01**
Old Dominion Univ., Norfolk, VA. Dept. of Mechanical Engineering and Mechanics.
Attitude and Vibration Control of a Large Flexible Space-Based Antenna.
Progress Report, period ending 14 Aug. 1982.
S. M. Joshi, and G. L. Goglia. Sep 82, 33p NAS 1.26:169419, NASA-CR-169419
Contract NAG1-102

The problem of control systems synthesis is considered for controlling the rigid body attitude and elastic motion of a large deployable space based antenna. Two methods for control systems synthesis are considered. The first method utilizes the stability and robustness properties of the controller consisting of torque actuators and collocated attitude and rate sensors. The second method is based on the linear quadratic Gaussian (LQG) control theory. A combination of the two methods, which results in a two level hierarchical control system, is also briefly discussed. The performance of the controllers is analyzed by computing the variances of pointing errors, feed misalignment errors and surface contour errors in the presence of sensor and actuator noise.

N82-33423/6 PC **A05**/MF **A01**
Howard Univ., Washington, DC. Dept. of Mechanical Engineering.
The Dynamics and Control of Large Flexible Space Structures-V.
Final Report.
P. M. Bainum, A. S. S. R. Reddy, C. M. Diarra, and V. K. Kumar. Aug 82, 83p NAS 1.26:169360, NASA-CR-169360
Grant NSG-1414

A general survey of the progress made in the areas of mathematical modelling of the system dynamics, structural analysis, development of control algorithms, and simulation of environmental disturbances is presented. The use of graph theory techniques is employed to examine the effects of inherent damping associated with LSST systems on the number and locations of the required control actuators. A mathematical model of the forces and moments induced on a flexible orbiting beam due to solar radiation pressure is developed and typical steady state open loop responses obtained for the case when rotations and vibrations are limited to occur within the orbit plane. A preliminary controls analysis based on a truncated (13 mode) finite element model of the 122m. Hoop/Column antenna indicates that a minimum of six appropriately placed actuators is required for controllability. An algorithm to evaluate the coefficients which describe coupling between the rigid rotational and flexible modes and also intramodal coupling was developed and numerical evaluation based on the finite element model of Hoop/Column system is currently in progress.

22B. Spacecraft

N82-33413/7 PC **A02**/MF **A01**
National Aeronautics and Space Administration, Washington, DC.
Intelsat V-E(F-5).
22 Sep 82, 21p NAS 1.15:84857, M-491-203-82-05, NASA-TM-84857

Prelaunch mission plans for the INTELSAT V-5 (F-5) commercial communications satellites are summarized. Voice circuits, television channels, and a Maritime Communications Services package for the Maritime Satellite Organization (INMARSAT) to provide ship/shore/ship communications are described.

N82-33696/7 PC **A05**/MF **A01**
Lockheed Missiles and Space Co., Inc., Huntsville, AL. Huntsville Research and Engineering Center.
Study of Laser Heated Propulsion Devices. Part 1: Evaluation of Laser Devices, Fuels and Energy Coupling Mechanisms.
Final Report.
O. C. Hofer. Apr 82, 77p NAS 1.26:170625, LMSC-HREC-TR-D784744-PT-1, NASA-CR-170625
Contract NAS8-33974

Closed cycle, CW waveform and short wavelength laser devices are desirable characteristics for laser propulsion. The choice of specific wavelengths for hydrogen fuel affects the operational conditions under which a laser supported absorption (LSA) wave is initiated and maintained. The mechanisms of initiating and maintaining LSA waves depend on the wavelength of the laser. Consequently, the shape and size of the hot core plasma is also dependent on wavelength and pressure. Detailed modeling of these mechanisms must be performed before their actual significance can be ascertained. Inverse bremsstrahlung absorption mechanism is the dominant mechanism for coupling energy into the plasma, but other mechanisms which are wavelength dependent can dictate the LSA wave plasma initiation and maintenance conditions. Multiphoton mechanisms become important at visible or shorter wavelengths. These are important mechanisms in creating the initial H2 gas breakdown and supplying the precursor electrons required to sustain the plasma.

N82-34127/2 PC **A03**/MF **a01**
Massachusetts Inst. of Tech., Cambridge. Space Systems Lab.
Space Applications of Automation, Robotics and Machine Intelligence Systems (Aramis). Volume 1: Executive Summary.
Final Report.
R. H. Miller, M. L. Minsky, and D. B. S. Smith. Aug 82, 46p NAS 1.26:162079, SSL-21-82-V-1, NASA-CR-162079
Contract NAS8-34381

Potential applications of automation, robotics, and machine intelligence systems (ARAMIS) to space activities, and to their related ground support functions are explored. The specific tasks which will be required by future space projects are identified. ARAMIS options which are candidates for those space project tasks and the relative merits of these options are defined and evaluated. Promising applications of ARAMIS and specific areas for further research are identified. The ARAMIS options defined and researched by the study group span the range from fully human to fully machine, including a number of intermediate options (e.g., humans assisted by computers, and various levels of teleoperation). By including this spectrum, the study searches for the optimum mix of humans and machines for space project tasks.

N82-34128/0 PC **A09**/MF **A01**
Massachusetts Inst. of Tech., Cambridge. Space Systems Lab.
Space Applications of Automation, Robotics and Machine Intelligence Systems (Aramis). Volume 3: Aramis Overview.
Final Report.
R. H. Miller, M. L. Minsky, and D. B. S. Smith. Aug 82, 177p NAS 1.26:162081, SSL-23-82-V-3, NASA-CR-162081
Contract NAS8-34381

An overview of automation, robotics, and machine intelligence systems (ARAMIS) is provided. Man machine interfaces, classification, and capabilities are considered.

N82-34186/8 PC **A03**
National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.
Sonic Boom Measurement Test Plan for Space Shuttle STS-2 Reentry.
H. R. Henderson. Nov 81, 32p NAS 1.15:84858, NASA-TM-84858

Procedures and system specifications associated with the space shuttle STS-2 sonic boom measurement program are described. Specifically included are details such as mobile data acquisition station locations, measurement systems calibration levels, predicted sonic boom overpressure levels, overpressure level assignment for each data acquisition station, data recording times on and off, universal coordinate time, and measurement system descriptions.

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NTIS®

Index entries in this section are selected to indicate important ideas and concepts presented in a report. When using the keyword index, be sure to look under terms narrower, broader, or related to a particular topic. Although some of the keywords are not selected from a controlled vocabulary of terms, most of them have been selected from the DoD, DoE, NASA, or NTIS controlled vocabularies. The entries are arranged by keyword and then by the NTIS order number.

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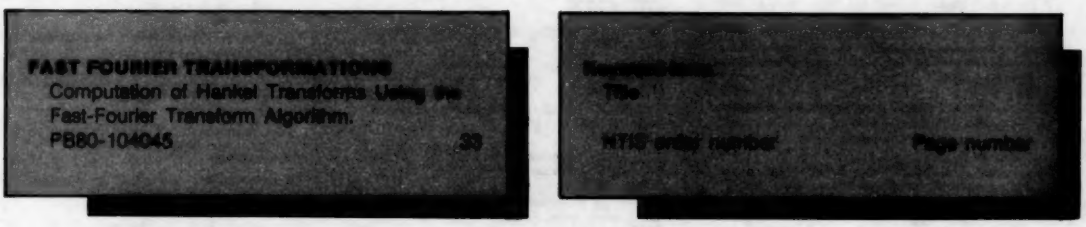

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ABSORPTIVITY
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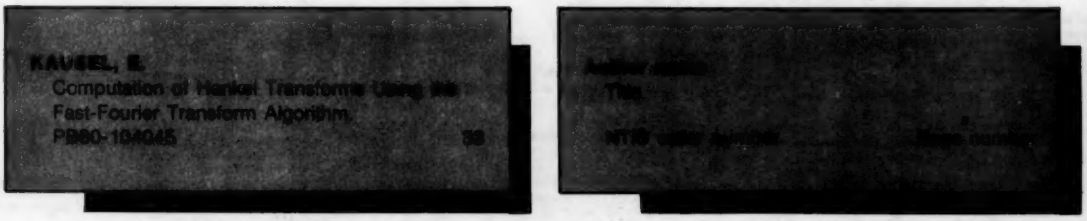

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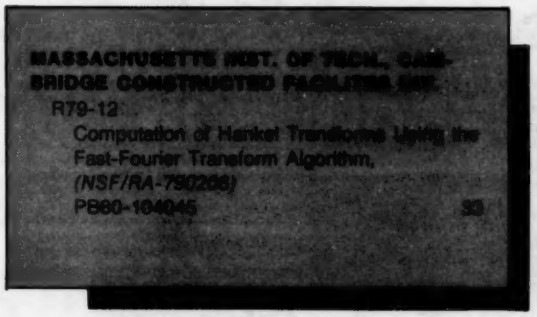

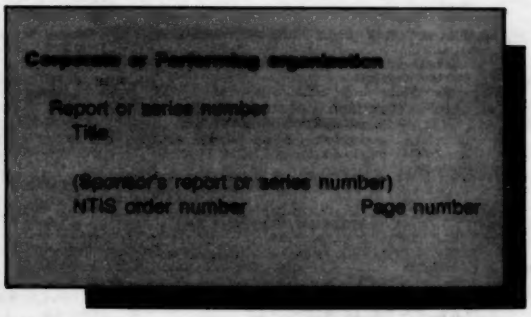

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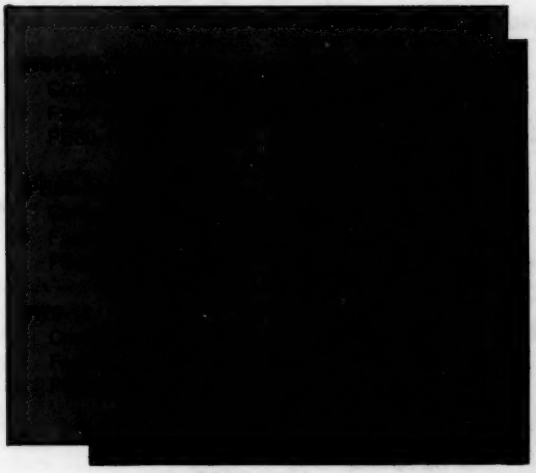

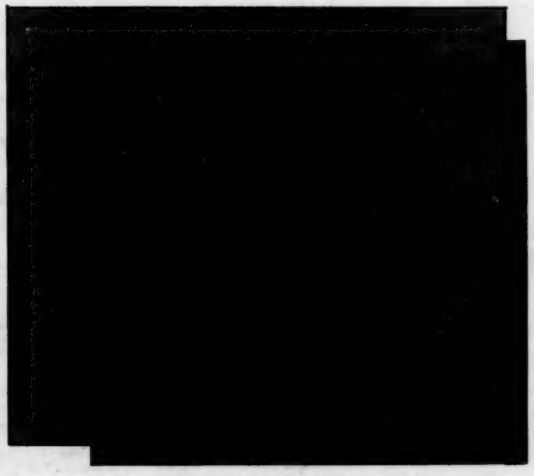

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